

# The IRON AGE

May 30, 1957

The National Metalworking Weekly



**How To Get More  
For Your  
Stamping Dollar P.97**

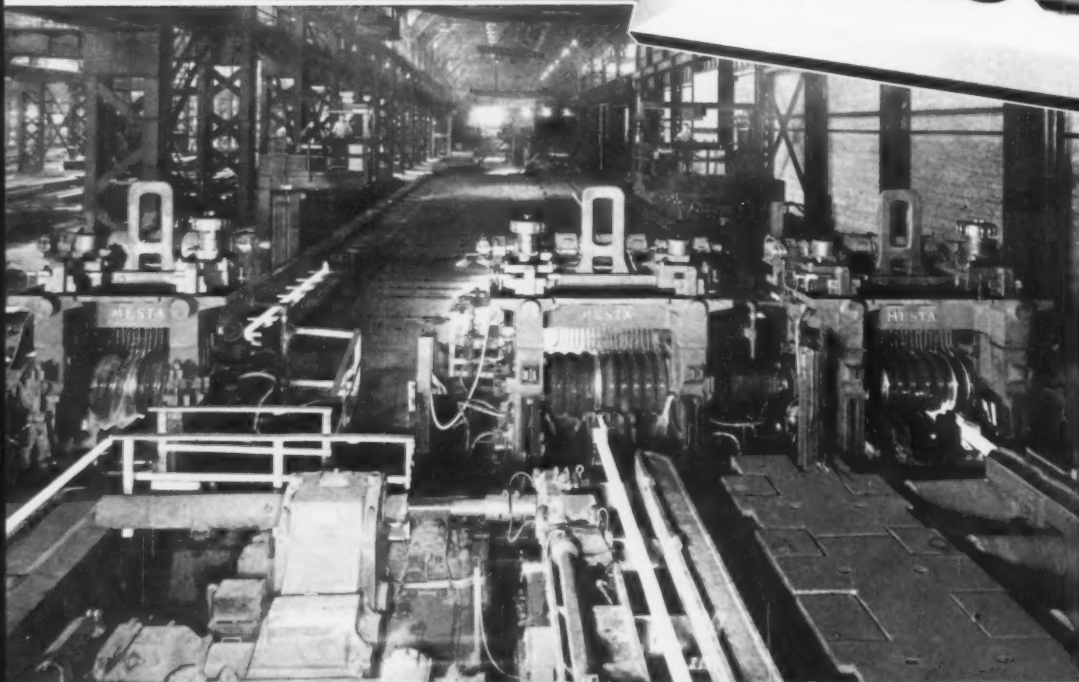
**What Aircraft Cuts  
Mean to Metalworking – P. 51**

**Steel Leaders  
Call Shots on Business – P. 56**

**Digest of the Week P.2-3**

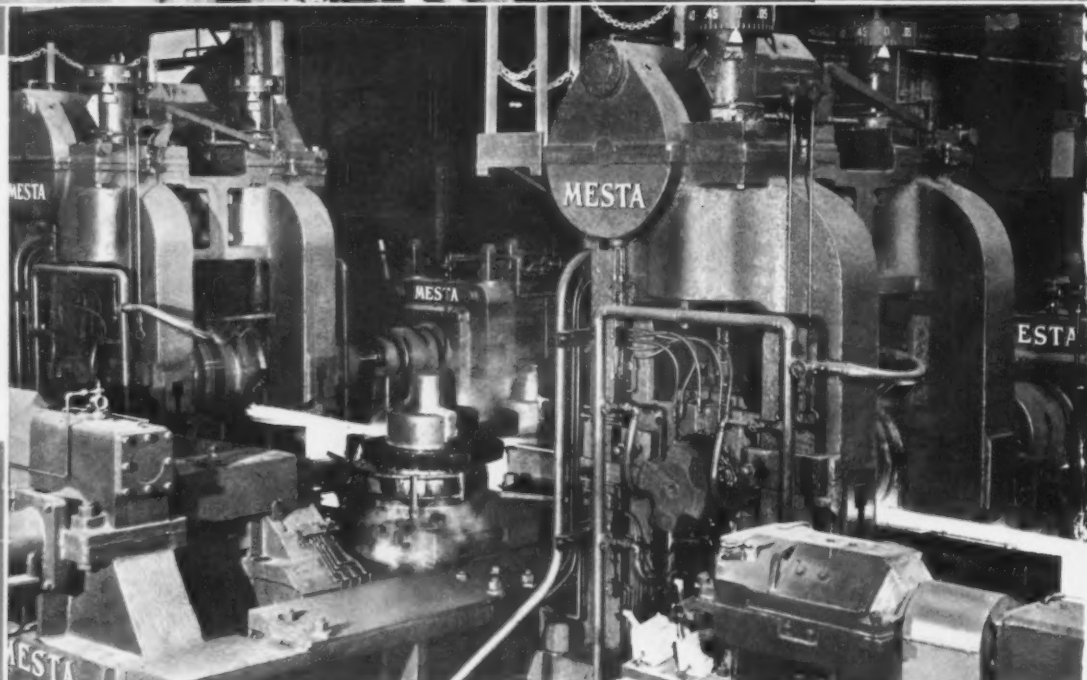
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A foursome holes out on the 4th green at Inverness. The bethanized chain-link fence was made and erected by Marleau-Hercules Fence Co., Toledo.

## Inverness Club, host for USGA Open, chooses bethanized fence

Top golfers will compete for the coveted USGA Open crown on the scenic and challenging links at the Inverness Club near Toledo, Ohio. Getting ready for the tournament, to be held June 13 to 15, was a big task for the club management.

One of their first steps last fall was to enclose several long stretches of the club boundary. They wanted a fence that would be both attractive and long-lasting — two good reasons for choosing fence made from bethanized wire.

Bethanized wire is used for much of the chain-link fence sold today. Its uniform coating of pure zinc is deposited electrolytically on the steel wire. It goes on atom by atom. There are no thin spots. Long after other types of fence have become unsightly, bethanized

fence stays bright because the tightly bonded jacket of zinc just won't crack or flake off.

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# The IRON AGE

May 30, 1957—Vol. 179, No. 22

## Digest of the Week in

\*Starred items are digested at right

### EDITORIAL

Budget Cutting Time: Everyone Must  
Do His Part 7

### NEWS OF INDUSTRY

- \*Special Report: Will Missiles Blast  
Aircraft Industry Plans? 51
- \*Big Business Probes Begin 55
- \*Will Steel Sales Rally in 1957? 56
- \*How Money Can Earn Its Keep 58
- Design Engineering Proves Value 59
- \*Aluminum Sales Make a Comeback 60
- \*Republic Sees Decade of Growth 62
- Iron Age Salutes 65
- Men in Metalworking 81
- Metalworking Briefs 152

### NEWS ANALYSIS

- Newsfront 49
- Report to Management 67
- \*Automotive 68
- \*Washington 73
- West Coast 75
- \*Machine Tool 77

### FEATURE ARTICLE

How to Get More for Your Stamping  
Dollar 97

### MARKETS & PRICES

- \*Iron Age Summary—Steel Market 127
- Outlook Brightens. 127
- Steel Products Markets 128
- Comparison of Prices 129
- Iron and Steel Scrap Markets 130
- Scrap Prices 131
- Nonferrous Markets 134
- Steel Prices 137

### REGULAR DEPARTMENTS

- Calendar 13
- Free Literature 114
- Technical Briefs 86
- New Equipment 124
- Clearing House 146

INDEX TO ADVERTISERS 152

## NEWS DEVELOPMENTS

### Will Guided Missiles Blast Aircraft Industry Plans?

Air Force General David H. Baker dropped a verbal bomb when he predicted severe cutbacks in



aircraft in favor of guided missiles. Now a controversy rages over the issue. P. 51

### Congress Begins Big Business Investigations

Five separate congressional committees are getting ready for an attack on business concentration and price leadership by a few firms. One group headed by Sen. Kefauver is going after the steel and auto industries. P. 55

### How to Make Money Earn Its Keep

An idle dollar does nobody good. But there are many ways you may not have thought of to keep money working for your company. At Gulf Oil Corp., the secret is short-term investments. P. 58

### Republic Steel Sees Continued Industrial Growth

Analysis of a company-sponsored poll indicates at least a decade of

# Metalworking



prosperity. Gains in steelmaking technology and warehouse operations will be prominent. **P. 62**

## How To Put Machining Research To Work

If you want to machine metal more efficiently, take a look at the way General Electric does it with a complete machinability program. One aim is finding the most economic cutting speed at which to operate. **P. 77**

## FEATURE ARTICLE

### HOW TO GET MORE FOR YOUR STAMPING DOLLAR

Stamped and drawn metal parts are essentially low-cost items. Yet further opportunities for cutting stamping costs are many—mostly in the area of product design. This special 16-page feature in the continuing 'Dollar' series discusses ways you can improve design for best stamping results. **P. 97**

### Start With Basic Design Rules—Keys To Impressive Savings

A well-designed stamping assures you of two things: (1) It will function correctly in service and, (2) It can be produced economically and efficiently. Point 2 requires that the product designer know stamping techniques and die design. **P. 98**

### Flat Blanks Cut Tooling Costs In Stamping Production

Where possible, make your stampings as flat pieces. They

simplify tooling and production, mean fewer rejects. **P. 99**

### Drawn Parts Call For Good Design

There are good and bad ways to draw cups, shells, boxes and other shapes. Here are the right methods for drawing these shapes, with hints on watching diameter sizes. **P. 105**

### Stamping Do's and Don'ts To Bear In Mind

Additional discussions cover Embossing and Curling, Making Holes, Getting More from Stock, and Saving Weight with Ribs and Beads, Keeping Tolerances Broad, Improving Bending, and Choosing Joining Methods Wisely are also covered. **P. 107**

## MARKETS & PRICES

### Steelmen Expect 4th Quarter Surge in Sales

Consensus among executives at AISI meeting in New York is that this year will be as good as 1956. Most feel that current slack will not cancel out the expected July steel price increase. **P. 56**

## NEXT WEEK

### Take a New Look at Your Depreciation Policy

Joel Barlow, well-known Washington attorney and an expert on depreciation, will present his refreshing views on the subject. It is the 10th in THE IRON AGE Modern Management Series.

◀ **STAMPING EFFICIENCY:** If you are looking for ways to improve your stamping setup—like this Budd Co. engineer—you can find them. A good place to start is in the area of product design. And it will be worthwhile to consider all phases of production **P. 97**

### Aluminum Sales Staging A Comeback

With buyer inventory adjustments about over, aluminum producers are optimistic on the sales outlook for the rest of '57. But expanding capacity will keep the pressure on marketing efforts. **P. 60**

### Foreign Car Sales Gaining in U. S.

Detroit is keeping a wary eye on small car imports. They have doubled two years running. But industry executives say the 91,000 foreign units sold here last year is still too small to worry about. **P. 68**

### Negotiated Government Contracts Are Under Fire

A House subcommittee decides it is time to steer the military toward increased use of advertised bids on buying. **P. 73**

### Steel Market Outlook Starts To Brighten

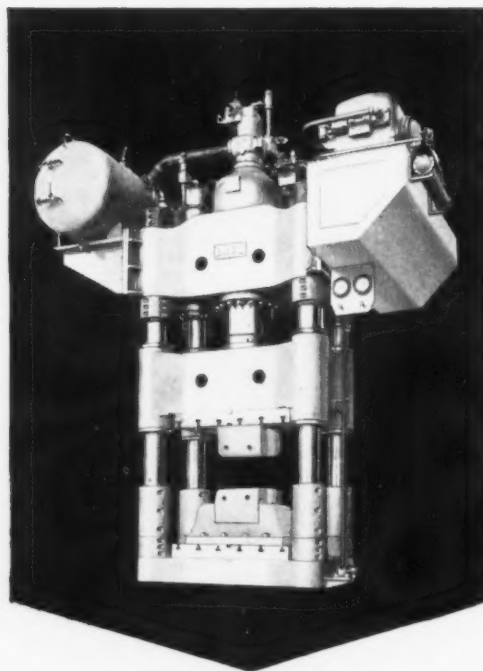
Mills find the order situation improving in sheet and strip. It's not enough to indicate a definite trend as yet, but the benchmarks are there. **P. 127**





# PRESS or HAMMER?

*..which is best  
for your  
forged product?*



When it comes to open die forgings, there are as many different opinions on what equipment is best as there are open die forge shops and open die forgings.

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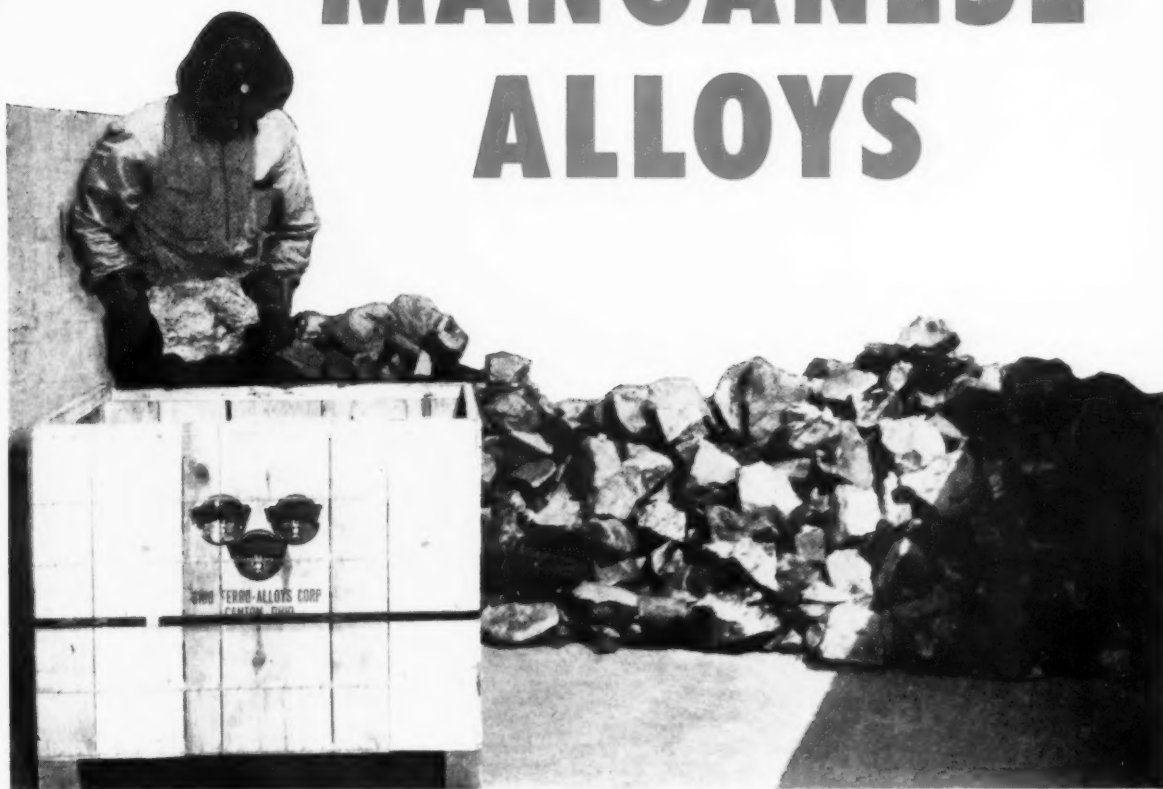
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# Budget Cutting Time

## Everyone Must Do His Part

This is a soul-searching piece. Unless you want to search yours, don't read it. Because we aren't going to mince words.

Everyone in his right mind wants our government to cut its costs. We realize we are going hog wild in national spending.

Business people are clamoring for a reduction in the budget. Congressmen are hearing from home. They listen when the trend is toward rigid economy. That's why they are on a rampage to cross up the President on the budget.

It is improper to wave the flag when using an argument for cutting government spending. Business can dispense with the "patriotic gesture". Management wants less spending because it is tired of the permanent tax gun held at its head.

If we must yell for reductions, let's be honest about it: Let's not be hypocritical—either consciously or as the couch boys would say "with socially acceptable symbols". The best way to deal with this question is to decide right now that we will withdraw some of our demands from the government pork barrel.

Let's not change our hats so often. If we are on the Chamber of Commerce and want more govern-

ment help for our city or pet project, then it is up to us to cut it down—or out.

Suppose we are trying to get this or that project built or changed at government expense; let's either ask for it and shut up about a cut in the budget; or ditch it and go all out for economy.

A deep cut in the budget will eliminate some important statistics from the Census Bureau. Do we want that? If that's what we want, we must not be so prone to say that what the "other fellow" wants is silly and uncalled for. Let's be consistent—even if being consistent is quite a miracle these days.

If we want the budget really cut, we must see some defense contracts go down the drain. If we are willing—as we say in our private clubs—to believe that the Reds are bluffing with a lot of their talk, then we can demand a cut. But if we do, we must see some of our projects wiped out. It can't always be the other fellow's pet. There aren't enough "other fellows" to stand what we won't take.

Let's fish or cut bait: Either we want less government spending and will give up our pets or we don't. It calls for basic honesty!

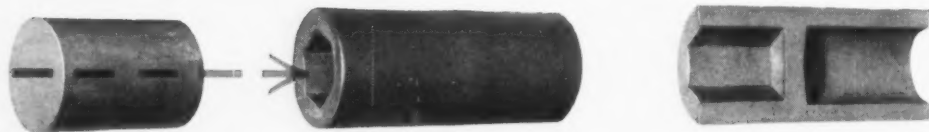


Editor-in-Chief

## AUTOMOBILE TORSION BAR ANCHOR HOUSINGS

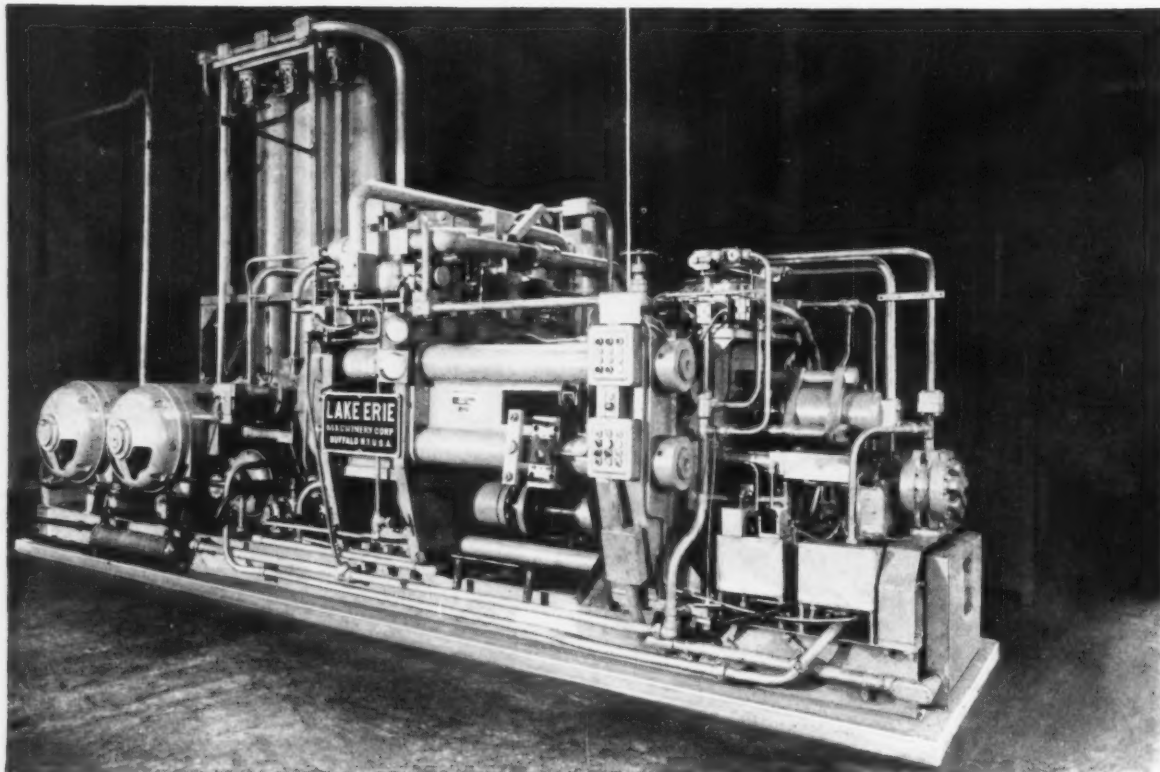
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## LETTERS FROM READERS

### Rapid Amortization

**Sir**—Please send us at least 100 copies of Secretary Humphrey's April 18 article as soon as possible.

Our Debt Analysis and Tax Analysis staffs are referring to this article in answering the many letters being received each day on the subject of rapid amortization.—N. A. Lennartson, Asst., Treasury Department, Washington, D. C.

### Diversification

**Sir**—Would it be possible for us to obtain a dozen copies of the article on Page 107 of your May 16 issue entitled "Auto Part Makers Go After Diverse Markets"?—W. N. Warren, American Metal Products Co., Detroit, Mich.

### Glow Discharge

**Sir**—The May 2nd, 1957 issue of The Iron Age contained a feature article entitled "New Nitriding Process Uses Glow Discharge." Bernard Berghaus, Prof. Walter Weizel and Dr. Adolf Fry were mentioned as developing and working on this process. Would you please advise the addresses of these gentlemen and to whom you would suggest inquiries be addressed for additional information?—G. W. Fischer, General Electric Co., Cincinnati.

■ For the fast results write Julius Klein, 110 South Dearborn St., Chicago.—Ed.

### Sell Service

**Sir**—We shall appreciate your sending, addressed to the attention of the undersigned, six copies of the special report entitled "Steel Warehouses Sell Services and Low Total Cost," which appeared in your issue of May 16th.—J. H. Congdon, President, The Congdon and Carpenter Co., Providence 1, R. I.

### Organic Finishing

**Sir**—Please send us as many as possible up to ten copies of "How To Get More For Your Organic Finishing Dollar."

I am a regular reader of Iron Age and this article was one of the best of its kind that I have ever read.—J. W. Lyon, Purchasing Agent, Virginia Metal Products, Orange, Va.

### White Collar Drive

**Sir**—I had the pleasure recently of reading your most interesting—and illuminating—article entitled "Brace for White Collar Drive."

I'm not sure whether it appeared in one of your April or May issues, but in any event—if I'm not too late with my request—I'd sincerely appreciate a half-dozen copies.—W. R. Carle, Grand Rapids, Mich.

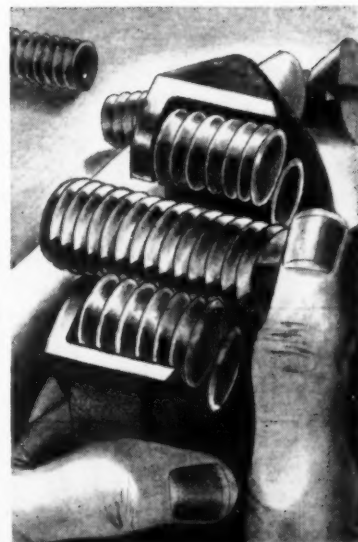
■ The article appeared April 11. Copies are on the way.—Ed.

### Industrial Design

**Sir**—Please send me a copy of the article "Industrial Design Gives More Than a New Look." This article by Raymond Loewy appeared on pages 67-69 of the May 9 issue.—H. T. Avery, Vice President, Engineering, Marchant Calculators, Inc., Oakland 8, Calif.



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## FATIGUE CRACKS

### Dollar Stretching

There are two ways to look at the fact that the old Yankee dollar just ain't what it used to be. One attitude, unclouded by memories of tougher times, implies, "Spend it any way you like, it's only worth half a buck. Who worries about half a buck?"

The other attitude toward the 1957 dollar is nearer and dearer to your heart, we think. It stands on the belief that there's a real challenge in making any dollar go as far as possible.

If you agree with the latter point of view and you also happen to be



Stamping razor blades.

in the metal stamping business, we have a very special surprise for you.

It's article No. 9 in our series, "How to Get More For Your Metalworking Dollar." It's a 16-page technical feature section in this week's issue and it's all about — you guessed it — S-T-A-M-P-I-N-G-S.

The editors have packed hundreds of dollar-stretching ideas into these 16 pages. But they haven't done it by a "shotgun" technique, scattering unrelated items all over the place.

On the contrary. There are separate sections on a number of topics, including: Ways to simplify stamping design. . . . Tips on handling hole problems economically. . . . Cost saving methods for making drawn parts. . . . How to make bends efficiently.

There's more, of course. But let's just say it's a dollar-wise article all around. Look for it on p. 97.

### Back Stiffener

IRON AGE Editor George Sullivan had seldom been in better form. His ad-libs were going over at their best recently when he introduced the main speaker at a meeting of the Society of Business Magazine Editors in Washington.

With introduction completed, he relaxed to hear Maj. Gen. David H. Baker, director of procurement and production, Air Materiel Command. But suddenly his editorial back stiffened.

The General was flatly predicting severe cutbacks in aircraft in favor of guided missiles, broad changes in the entire weapons concept, with resulting shifts in emphasis among aircraft makers and suppliers.

This was big news, and was reported as such (May 23, P. 85). But that was only the beginning. IRON AGE editors from coast to coast were assigned to round up the entire story—to answer a few of these questions:

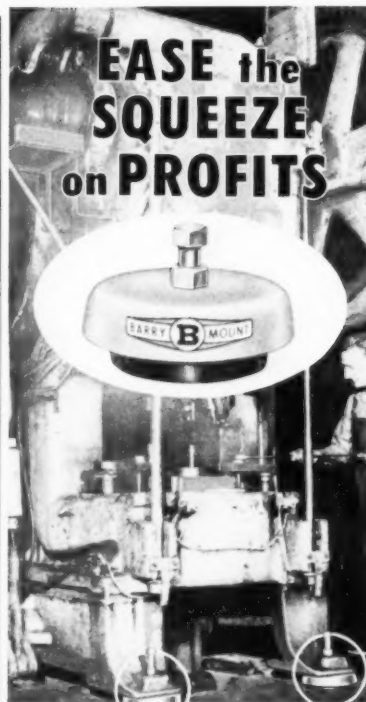
Just how serious will these cutbacks be? What will it mean to all the branches of metalworking? Will the subcontracting method be revised? What about dispersal?

You'll find out a lot about the controversy, about aircraft makers' plans, supplier reaction in this week's Special Report, P. 51.

### New Puzzler

A man known to be a reckless driver was found in his garage early one morning dead from a bullet. The only clues found anywhere around were two new, unsharpened pencils and two pair of roller skate tracks that led from the garage along the driveway out to the cement sidewalk.

Who was the murderer and why did he commit the crime?



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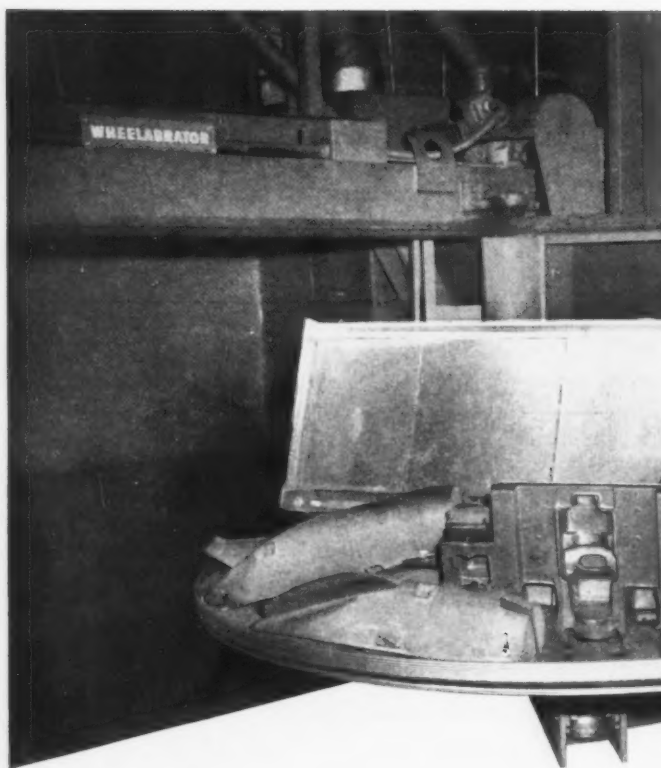
- Savings up to 20% in cost of production labor
- 90% saving in machine-installation cost
- Four-times faster set-up for special production

#### ARE HIGH COSTS SQUEEZING YOUR PRODUCTION — AND PROFITS?

Write for reprint of "The Iron Age" report on proved savings; also Barry Plant Survey Chart showing cure for eight production losses.

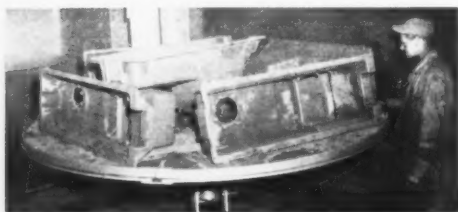


795 PLEASANT STREET, WATERTOWN 72, MASS.



Note the variety in size and shape of castings cleaned in one load on the Wheelabrator Swing Table at Casting Service Corporation.

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Diesel engine oil pans are cleaned 5 at a time. These gray iron castings are 46½" long, 15½" wide and 17" high.



Blasted 3 minutes on each side, this is how the castings look after having been scoured of sand and scale.

Ability of a 96-inch Wheelabrator Swing Table to clean mixed loads of large and small castings is an important extra advantage for Casting Service Corporation of LaPorte, Indiana. Being a jobbing foundry, it requires speed and flexibility in its equipment to meet customer deadlines and demands. Gray iron and semi-steel pieces are cleaned in the green state and after normalizing, without waiting to accumulate loads of castings of the same size and weight. This provides fast, thorough, low-cost cleaning, while permitting a steady flow of work.

For detailed information on the Swing Table story, send today for Bulletin No. 119D.



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## EXHIBITS, MEETINGS

**Western Plant Maintenance & Engineering Show**—June 11-13, San Francisco. (Clapp & Poliak, 681 Market St., San Francisco).

**Packaging & Handling Show**—Oct. 28-31, Atlantic City. (SIPMHE, One Gateway Center, Pittsburgh 22).

**Metal Show**—Nov. 2-8, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3).

### JUNE

**Society of Automotive Engineers**—Summer meeting on survey vehicle performance and current European design, June 2-7, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 485 Lexington Ave., New York.

**Institute of Radio Engineers**—National symposium on production techniques, June 6-7, Hotel Willard, Washington, D. C. Information: 609 Monticello Dr., Falls Church, Va.

**Manufacturing Chemists' Assn.**—Annual meeting, June 6-8, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1625 Eye St., N. W., Washington 6, D. C.

**American Boiler Manufacturers Assn. & Affiliated Industries**—Annual meeting, June 9-12, Skytop, Pa. Society headquarters, 1571 W. 117th St., Cleveland.

**The American Society of Mechanical Engineers**—Semi-annual meeting, June 9-13, Sheraton-Palace, San Francisco, Calif. Society headquarters, 29 W. 39th St., N. Y.

**The Magnesium Assn.**—Annual meeting for members only, June 10-11, The Homestead, Hot Springs, Va. Society headquarters, 122 E. 42nd St., New York.

**Malleable Founders' Society**—Annual meeting, June 13-14, The Broadmoor, Colorado Springs, Colo. Society headquarters, 1800 Union Commerce Bldg., Cleveland.

**Instrument Society of America**—National symposium on instrumental methods of analysis, June 13-15, University of Chicago. Society headquarters, 313 Sixth Ave., Pittsburgh.

**Pressed Metal Institute**—Annual national sales conference for the metal stamping industry, June 14, Hotel Carter, Cleveland. Society headquarters, 3673 Lee Rd., Cleveland.

**Assn. of Steel Distributors, Inc.**—Steel distribution seminar, June 14-17, Michigan State University, Lansing, Mich. Society headquarters, 29 Broadway, New York.

**American Society for Testing Materials**—Annual meeting with sessions on varied fields of materials technology, June 17-21, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 1916 Race St., Philadelphia.

**Drop Forging Assn.**—Annual meeting, June 19-22, Grand Hotel, Mackinac Island, Mich. Society headquarters, 419 S. Walnut St., Lansing, Mich.

**American Institute of Chemical Engineers**—50th anniversary meeting, June 22-27, Bellevue-Stratford Hotel, Philadelphia. Society headquarters, 25 W. 45th St., New York.

**Alloy Casting Institute**—Annual meeting, June 23-25, The Homestead, Hot Springs, Va. Society headquarters, 32 Third Ave., Mincola, N. Y.

**Wire Reinforcement Institute**—Annual spring meeting, June 24-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1049 National Press Bldg., Washington, D. C.

**Concrete Reinforcing Steel Institute**—Annual meeting, June 24-29, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 38 S. Dearborn St., Chicago.

## A COMPLETE REFRACTORIES SERVICE...

*for the  
Steel  
Industry*

OLIVE HILL BF and OLIVE HILL HI-FIRED brick rank high in any list of prominent and widely used brands of blast furnace refractories. Manufactured from dense-burning Kentucky flint fire clays by Grefco's unique manufacturing processes, OLIVE HILL brick set a standard for blast furnace refractory quality and workmanship.

Grefco processing of OLIVE HILL brick entails:

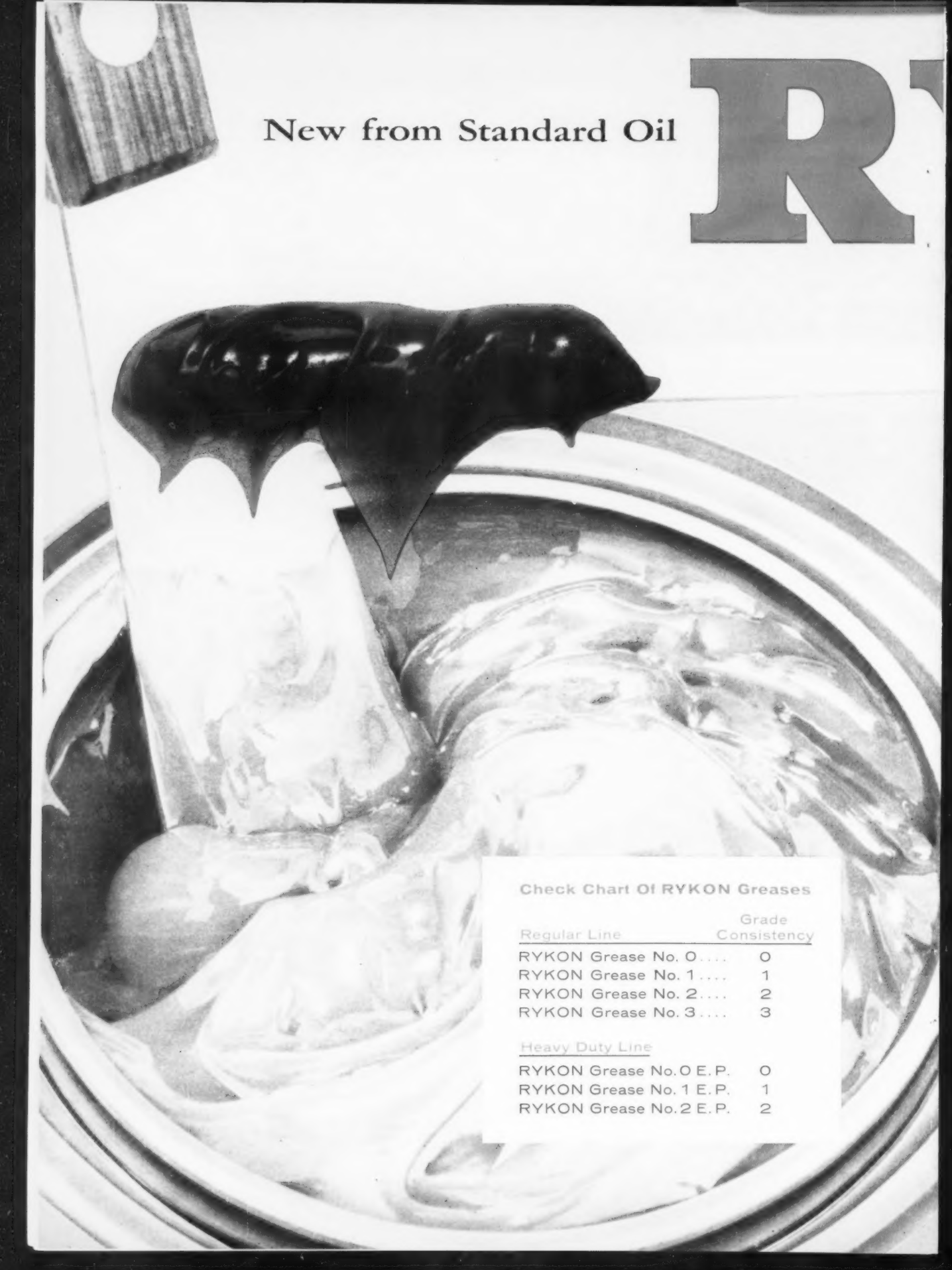
1. Careful selection, testing, stockpiling and blending of fire clays to insure uniform raw material quality.
2. Grinding and screening to prescribed formula to promote high density of product.
3. Efficient deairing during brick forming, also to promote density and proper physical structure.
4. Careful firing to exacting temperature schedules yields uniform high quality brick.
5. Close inspection of final product with gauging and sorting of brick to close size tolerance.
6. Quality control by statistical analysis procedures for the manufacturing processes.

In service, OLIVE HILL blast furnace brick, both BF and HI-FIRED, have produced many splendid performance records in the past. OLIVE HILL linings in presently operating furnaces, are giving outstanding performance and are more than meeting the increasing requirements of the expanding American Iron and Steel Industry.

**GENERAL REFRACTORIES CO.**  
Philadelphia 2, Pa.



# GENERAL REFRACTORIES



New from Standard Oil

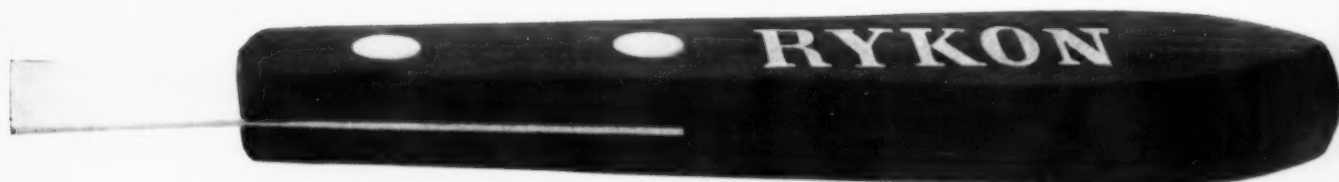
# RY

**Check Chart Of RYKON Greases**

<u>Regular Line</u>	<u>Grade Consistency</u>
RYKON Grease No. 0....	0
RYKON Grease No. 1....	1
RYKON Grease No. 2....	2
RYKON Grease No. 3....	3
<u>Heavy Duty Line</u>	
RYKON Grease No. 0 E. P.	0
RYKON Grease No. 1 E. P.	1
RYKON Grease No. 2 E. P.	2

# RYKON

GREASE



*Standard scores major breakthrough in grease technology to bring you better lubrication...help you make important savings in grease use, application and inventorying.*

Scientists at Standard Oil, after several years' research, have developed a new non-soap, organic grease thickening agent. This new thickening agent, plus other improvements in grease formulation, is now available in a new line of Standard Oil greases named RYKON. RYKON Greases have all of the desirable properties of the finest quality greases—but to a greater degree. Here are data on the characteristics of RYKON Greases:

**Mechanical stability**—RYKON Greases show minimum change in consistency under severe mechanical working . . . do not thin out excessively in service.

**Oxidation stability**—Thickener in RYKON Greases inhibits the absorption of oxygen which prevents free movement, results in bearing corrosion.

**Water resistance**—RYKON Greases do not lose consistency in presence of water. Resist water washout.

**High temperature stability**—RYKON Greases have an ASTM dropping point of over 480° F. They have greater heat stability than other petroleum oil greases. At sustained high temperatures, RYKON Greases remain soft and grease-like longer. High temperature range permits the broadest possible application.

**Oil separation**—There is a minimum bleeding of RYKON Greases in service and in storage.

**Wide temperature range**—Ability of RYKON Greases to lubricate over a wide temperature range makes them truly multi-purpose greases.

**Rust preventive properties**—RYKON Greases demonstrate a superior ability to prevent rust.

RYKON Greases are multi-purpose. To meet specific grease lubrication problems, they are formulated in four regular and three heavy duty grades. There is a RYKON Grease to meet every lubrication problem.

With a single RYKON multi-purpose grease doing all jobs in the plant, there's no wrong grease to use. Money invested in grease inventories is cut, storage and application facilities are reduced and maintenance training is simplified. Get the facts about RYKON Greases from the industrial lubrication specialist in the Standard Oil office nearest you in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.



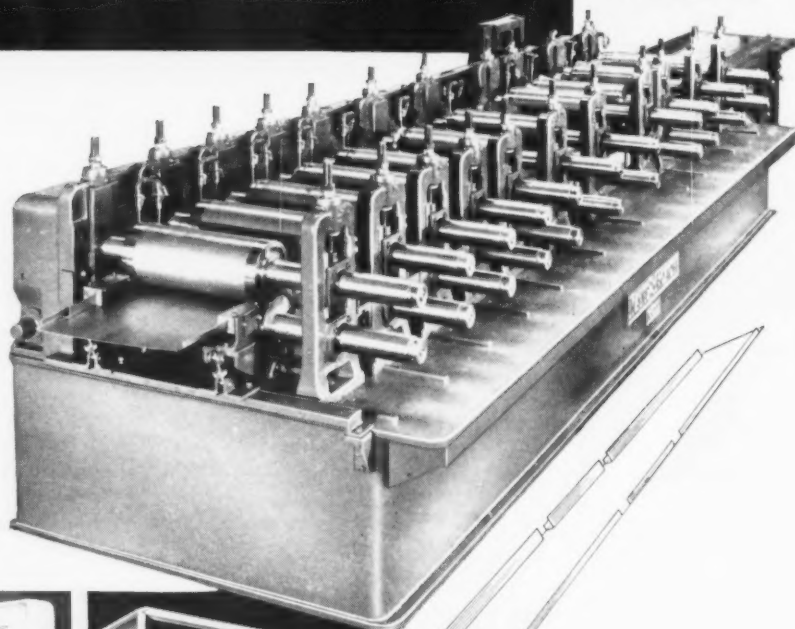
**STANDARD OIL COMPANY** (Indiana)

# 13 Seconds DOES IT!

**No. OS  
COLD ROLL  
FORMING  
MACHINE**

This machine, furnished to Carrier Corporation, roll forms the outer shell of a freezer unit in 13 seconds from 20 gauge cold rolled steel, pre-notched sheets.

Typical of similar K&R installations, this machine gives excellent performance, and maintains close tolerances.



**Carrier**

Above is the complete shape formed by the K&R No. OS from pre-notched steel in one operation. Other sections can be formed with additional tooling.

At left is the finished outer shell.

At extreme left, finished product marketed by Carrier. Engineers of the company are well satisfied with the accurate, fast performance of the K&R OS.

## KANE & ROACH No. OS COLD ROLL FORMING MACHINE MEETS *Carrier* PRODUCTION SCHEDULE

For fast, quality production and consistent cost reduction, always specify K&R. Far superior to press brake methods for producing forms even from pre-notched steel sheets . . . more accurate and faster, too.

**METAL WORKING MACHINERY SINCE 1887**

Cold Roll Forming Machines  
Bending Rolls      Straightening Rolls  
Slitting Lines      Flying Shears and Saws  
Special Metalworking Equipment



**SYRACUSE, NEW YORK • ESTABLISHED 1887**





## **cool metal for hot planes**

For jet and rocket aircraft engines, wings and surfaces that are subject to extreme conditions of heat, friction and corrosion, where the metal *must stand up* . . . design it, improve it and protect it with McLOUTH STAINLESS STEEL.

**specify**

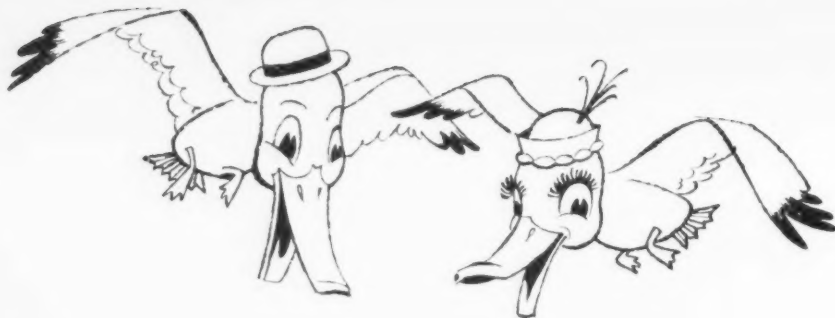
# **McLOUTH STAINLESS STEEL**

HIGH QUALITY SHEET AND STRIP

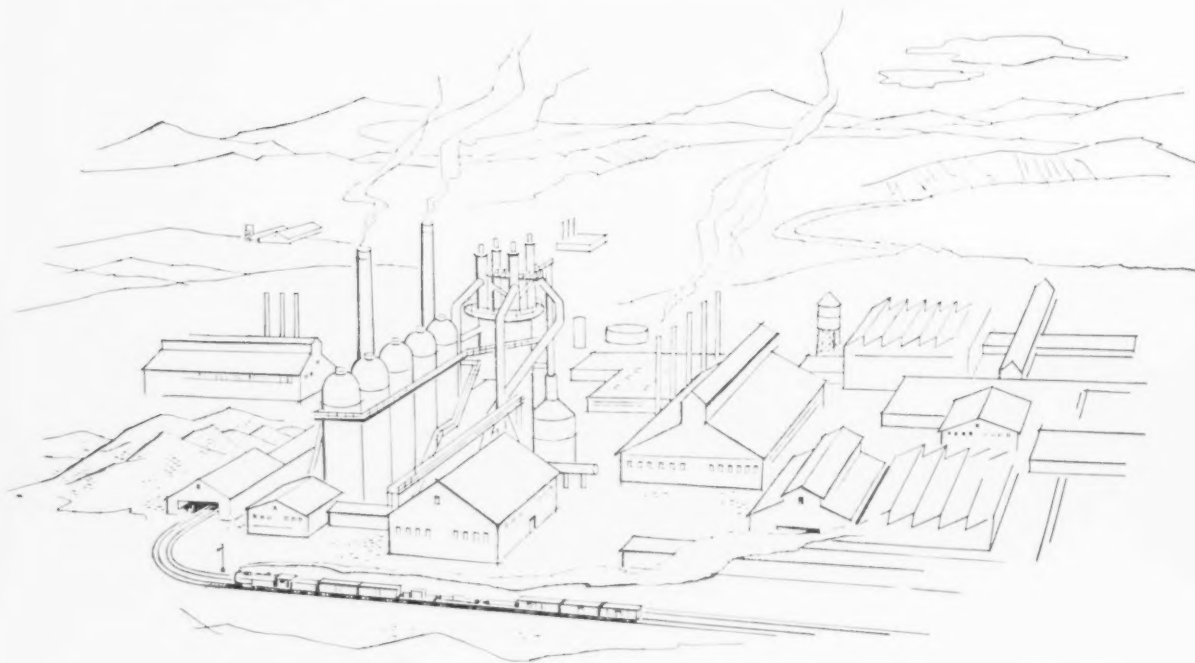
**for aircraft**



**McLOUTH STEEL CORPORATION** DETROIT, MICHIGAN  
MANUFACTURERS OF STAINLESS AND CARBON STEELS



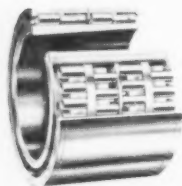
Production is smooth as water rolling off your back!



No wonder: **SKF**® has developed a roll neck mounting that meets the demands for higher speeds, closer gauge tolerances, better quality and heavier rolling loads. This multi-row has the features desired by every mill man — most usable capacity in a given space...easy to assemble and disassemble...uses oil or grease, even at high finishing stand speeds.

When you install a new mill, make sure it is equipped with **SKF** multi-row cylindricals. Or have an **SKF** engineer explain how your present mill can be changed over at minimum cost to eliminate roll neck troubles such as breakage, scuffing, excessive bearing failures or high maintenance time and cost.

7737



**SKF**

EVERY TYPE—EVERY USE

- Ball Bearings
- Cylindrical Roller Bearings
- Spherical Roller Bearings
- Tapered Roller Bearings ("Tyson")

\* Reg. U.S. Pat. Off. Tyson Bearing Corporation

**SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.**



**Cracked shaft in Valdosta ... His job: get a new one down to Georgia by tomorrow noon.** It's an emergency case, but it's not as tough as it sounds.

He's backed by the press industry's largest parts department... by a million dollar parts inventory in two plants... by telephone and teletype tie-ups between Parts Headquarters in Hastings, Michigan and Toledo and local sales and service centers throughout the country.

Which is another reason why we say, "Bliss is more than a name... it's a guarantee."



**E. W. BLISS COMPANY • Canton, Ohio**

*100 years of making metal work for mankind*

PRESSES • ROLLING MILLS • MILL ROLLS • DIE SETS • CAN MACHINERY • ORDNANCE

Roebling  
Royal Blue Wire Rope  
will wear and wear  
and wear!



This working quality means longer service life on *your* job. Add to this the fact that Royal Blue is stronger than the strongest rope you have been using and you have two excellent reasons why it has enjoyed faster acceptance than any wire rope in Roebling's history. Your distributor or Roebling Sales Office will give you the complete story, or contact John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

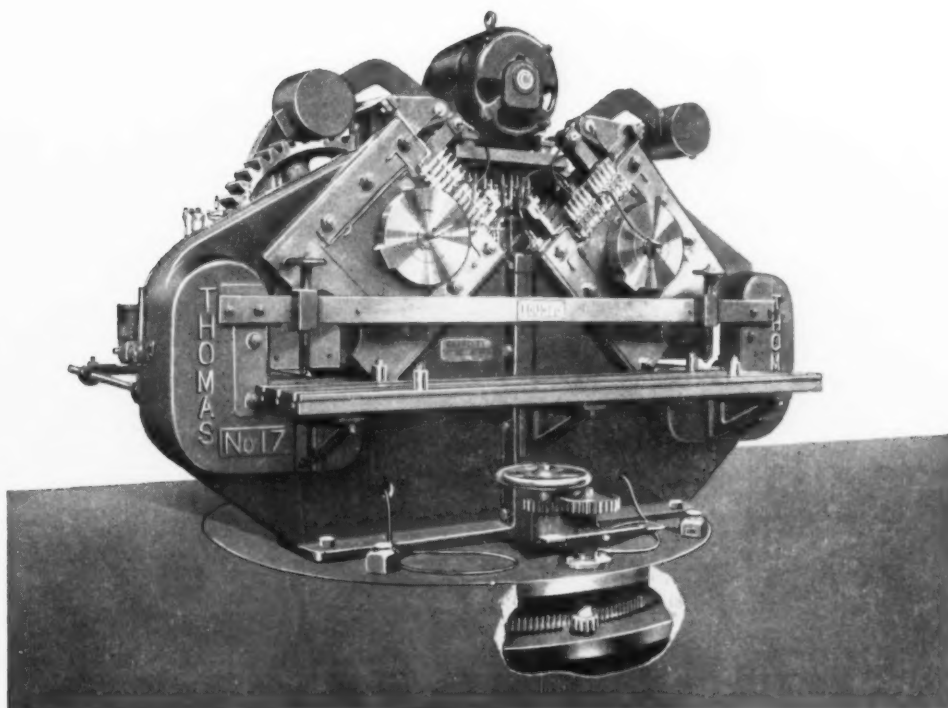
**ROEBLING**  

Distributors, Branches and Warehouses Throughout the Country—Subsidiary of The Colorado Fuel and Iron Corporation



# BUYING A DOUBLE ANGLE SHEAR?

If so, it's not the first cost that counts . . . but *the cost per cut*



Thomas Double Angle Shears, like all Thomas Metal-working Machines, are built on the basis of delivering the lowest cost per unit of work.

Thomas does not attempt to design Angle Shears to a price, but builds them to give dependable, fast, economical shearing performance. This assures

you a minimum cost per cut and a rapid amortization of initial cost through increased production.

*Write for Bulletin 315*

## THOMAS

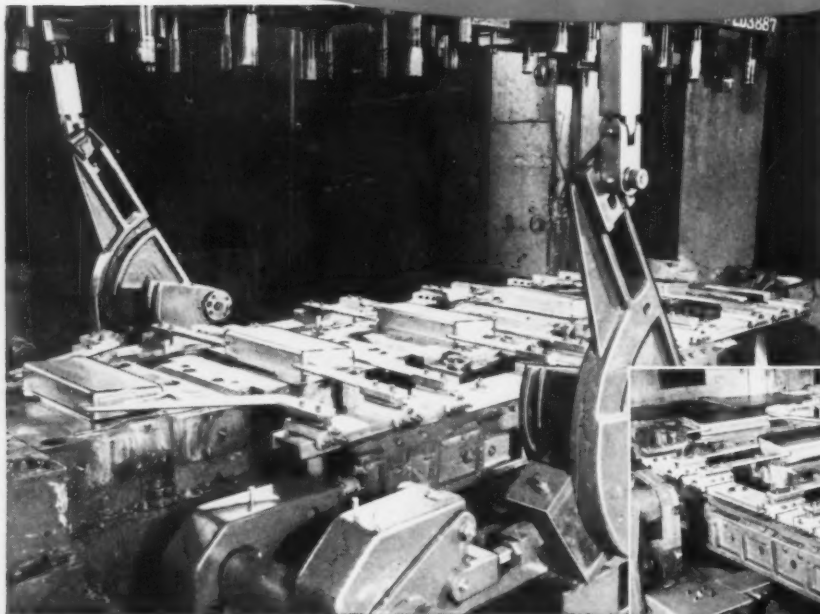
MACHINE MANUFACTURING COMPANY

PITTSBURGH 23, PA.

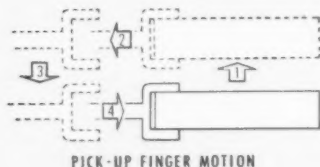
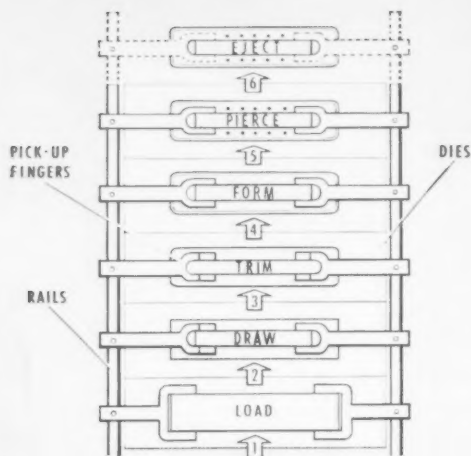
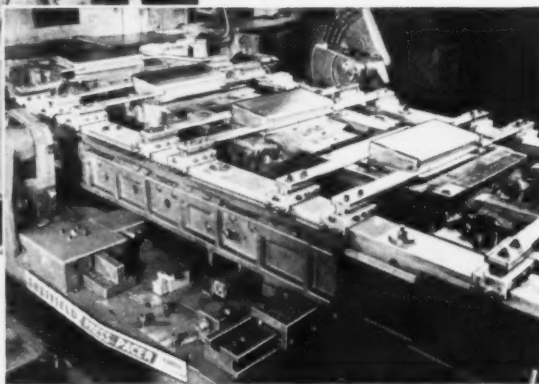
***The trend is to THOMAS***

..... in **Punches • Shears • Presses • Spacing Tables • Benders**

# AUTOMATE YOUR PRESS



*Automobile oil pan produced from coil stock in six operations on straight side press. Press Pacer automatically transfers stampings from each die station to the next.*



The Sheffield Press Pacer is a demountable mechanical transfer device which automates the straight side press while permitting its quick reconversion to conventional operation. It moves stampings from one die position to the next with each stroke of the ram—or from one press to the next.

The Press Pacer is completely mechanical in operation. It is driven by means of a lever arm bolted to the ram. The press so equipped may be fed from front to back or from right to left—loaded and unloaded either automatically or manually.

In a typical installation the Press Pacer enabled one press to handle three times the production previously turned out by six presses. In addition it eliminated work damage caused by moving parts from press to press.

WITHOUT RESTRICTING ITS USE TO ONE PRODUCT BY  
MEANS OF THE

## SHEFFIELD *PRESS PACER*



*Press Pacer automatically moves these torque tube flange stampings through 6 die stations on this large press.*

### COMPLETE FLEXIBILITY

The Press Pacer can be installed in a few hours. If any emergency makes manual feeding imperative, the Press Pacer may be demounted within minutes and the press operated in conventional fashion.

The Standard Press Pacer is built for presses with a bed area of 42" x 72" or larger, and a shut height of 14" or more—special units for smaller and larger presses.

Feed distance between dies for the **standard** unit may be varied between 8" and 36". Stroke adjustment has a range of 12".

Feed fingers and other elements may be readily revised to accommodate product changes.

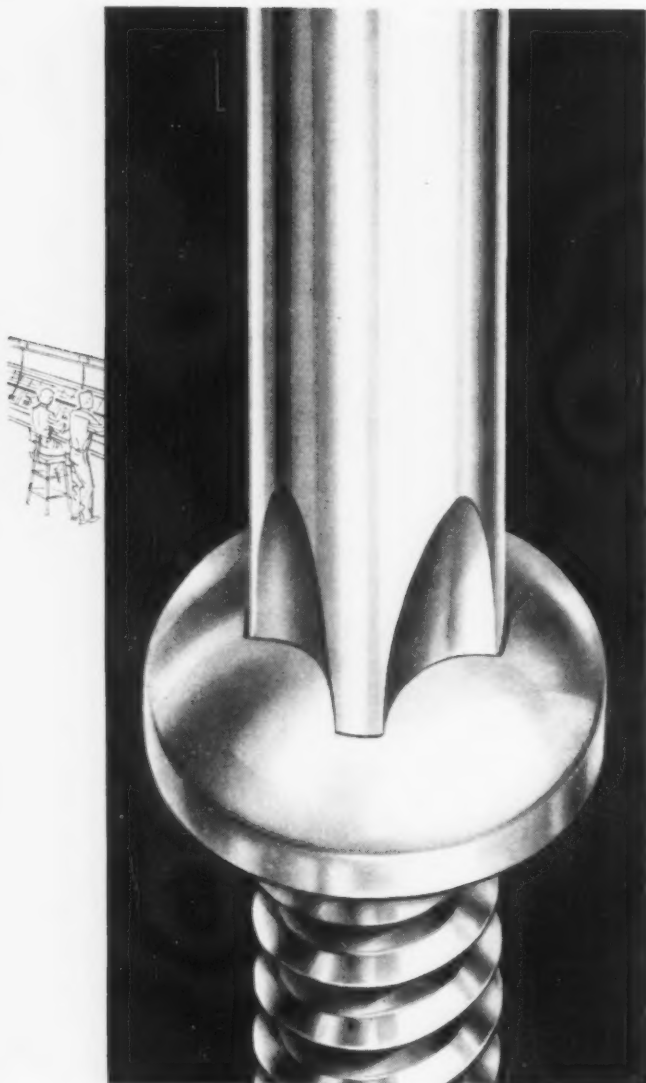
Before deciding on a change in your press equipment, find out how much a Press Pacer would save you.

Send your part prints, press information and production requirements to **The Sheffield Corporation, Dayton 1, Ohio, U.S.A., Dept. 8**

\*Trade-Mark

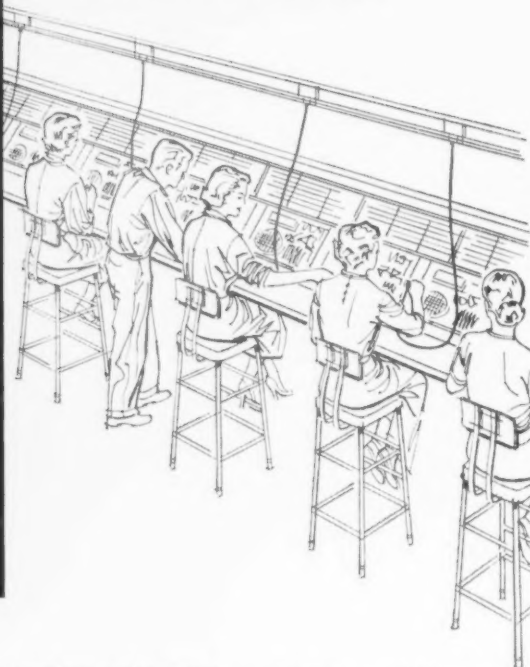


7721R



They may look  
the same but...

**AMERICAN**  
is the name!



In most instances, fastening costs are based on 4 main factors:

- |                   |                    |
|-------------------|--------------------|
| <b>1. Price</b>   | <b>3. Quality</b>  |
| <b>2. Service</b> | <b>4. Research</b> |

Local price fluctuations may seem beneficial in some circumstances, but no one gives you more of all four than American.

**American Gives You More of All Four**

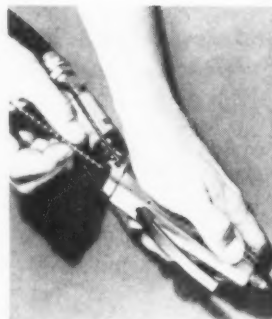
**In Service** — where American will meet required production schedules for single cases or car load lots.

**In Quality** — where superiority is produced at the machine and confirmed at the inspection tables.

**In Research** — where American engineers put the same skill that developed the Phillips Head Fastener into the creation of new products like SCREWSTICK for industries with special problems. SCREWSTICK makes possible power driving in place of the manual handling of small tedious-to-manage screws resulting in cost savings exceeding 4 to 1.

You can use these facilities to raise production, increase quality and lower costs because no one gives you more of all four factors: *price, service, quality and research* than American.

*Draw your own conclusions; send us your inquiry for price and delivery or your specifications for special fasteners. Write:*



SCREWSTICK being loaded into air-powered driver.



**American!**

AMERICAN SCREW CO., WILLIMANTIC, CONN.  
NORRISTOWN, PA. • CHICAGO, ILL. • DETROIT, MICH.





*Eagle Manufacturing Company,  
Wellsburg, West Virginia,  
called on Weirkote's  
deep-drawing capabilities  
for its new, seamless  
gasoline and oil cans*



## **WEIRKOTE<sup>®</sup> ZINC-COATED STEEL CAN BE SHAPED TO ANY PRODUCT SPECIFICATIONS!**

Using Weirkote zinc-coated steel, the Eagle Manufacturing Company gives us a much needed improvement in gasoline and oil can construction. A container with a smooth, seamless-drawn, dome-shape shell.

Result? This smooth, dome-shape top leaves no place for grease, dirt and moisture to collect. And by eliminating top and side seams, chance of leakage is almost nil. (There's a double-seamed bottom, further insuring a leak-proof container!)

Eagle uses Weirkote for this tough drawing job for these specific reasons: Weirkote zinc-coated steel can be worked and shaped to the very limits

of the steel base itself. Its zinc-coated "skin" will not flake or peel under even the most severe fabricating stress. Thus, any chance of corrosion is eliminated.

Here's a material for your product that combines the corrosion resistance of zinc with the proven superior strength of steel. And Weirkote has the inherent flexibility to completely "obey" all your shaping stresses.

Weirkote will form to *your* requirements, too. Let us show you how it can do any job for you—*better!* Send today for free booklet on Weirkote. Write Weirton Steel Company, Dept. B-19, Weirton, West Virginia.



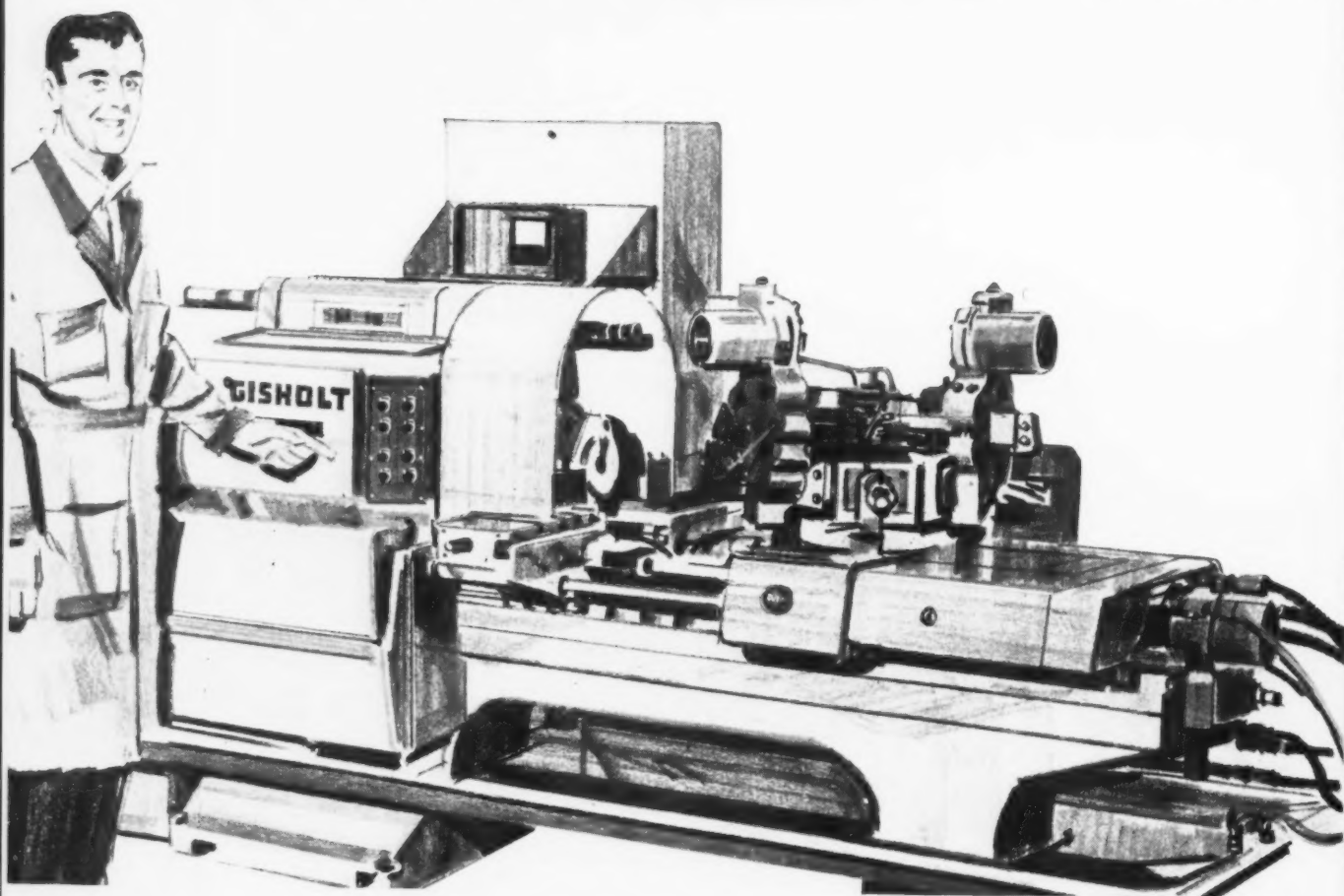
**WEIRTON STEEL  
COMPANY**

WEIRTON, WEST VIRGINIA

a division of



# *NEW Gisholt Fastermatic* **CUTS YOUR SETUP TIME**



**GISHOLT**  
MACHINE COMPANY  
Madison 10, Wisconsin



TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • PACKAGING MACHINES • MOLDED FIBERGLAS PLASTICS

# control panel

# 50% OR MORE

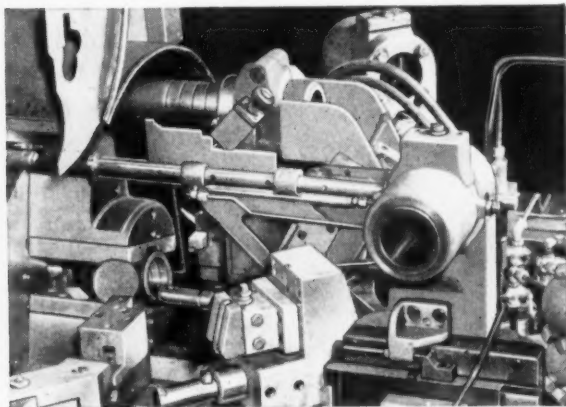
BY SIMPLY FLIPPING TOGGLE SWITCHES, your operators can cut automatic turret lathe setup time 50% or more with this electric setup control panel.

Thoroughly proved in production lines, this control panel is one of the many advanced features available on the new Gisholt MASTERLINE Fastermatic Automatic Turret Lathe.

Here's how the panel works: within finger-tip reach, your operator has a horizontal row of toggle switches for each face of the hexagon turret. By simply flipping the switches right or left, he pre-selects desired machine functions. Re-runs? Here the Fastermatic makes even more drastic cuts in setup time. A master reference card, made from the previous run, is used, and the machine is ready to go with absolute minimum preparation. Feed changes are fast and easy. Tool overhang is quickly minimized by re-positioning the saddle. Anywhere within the machine cycle, the operator can make a trial cut, withdraw the tools, mike the part, re-set the tools and resume forward feed.

What does this versatility mean to your own operations? It means more time spent cutting chips and more profit per piece. It means that less skill is required of the operator and he is free to handle additional units or do other work during machining cycles. It means you can utilize smart tooling and eliminate human errors...get record production on long runs...and also get the advantages of automatic cycle operation on relatively short runs.

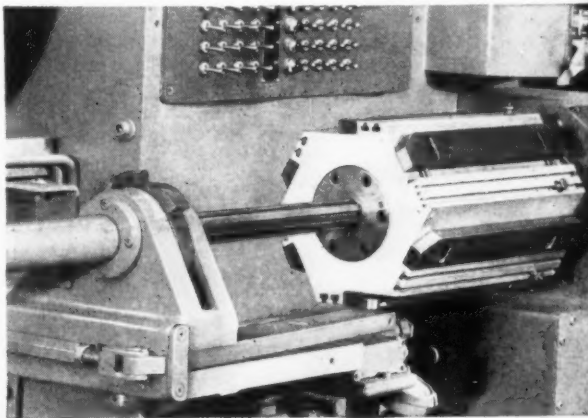
Ask your Gisholt Representative to tell you about the Fastermatic's new electric control panel...its increased capacity...its higher speeds and feeds and heavier construction. You'll also want to know about using the Gisholt JETracer on the Fastermatic. Call him today—or write Gisholt for literature...ask for Bulletin No. 1179.



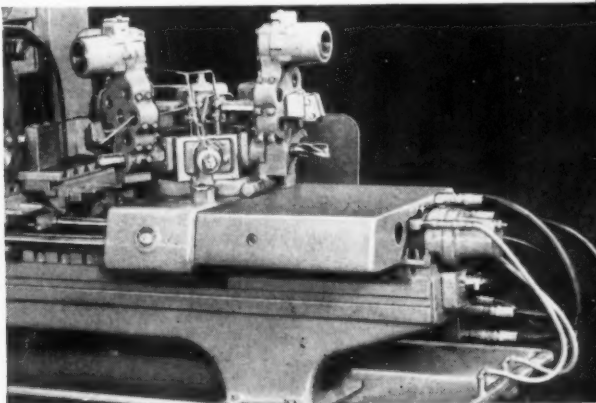
**GISHOLT JETracer**—mounts on any one of Fastermatic's turret stations. Provides exceptional accuracy for turning, boring or facing—either straight, taper or contour. Hydraulically operated; stylus follows contour of template controlling movement of single-point tool on sliding member.



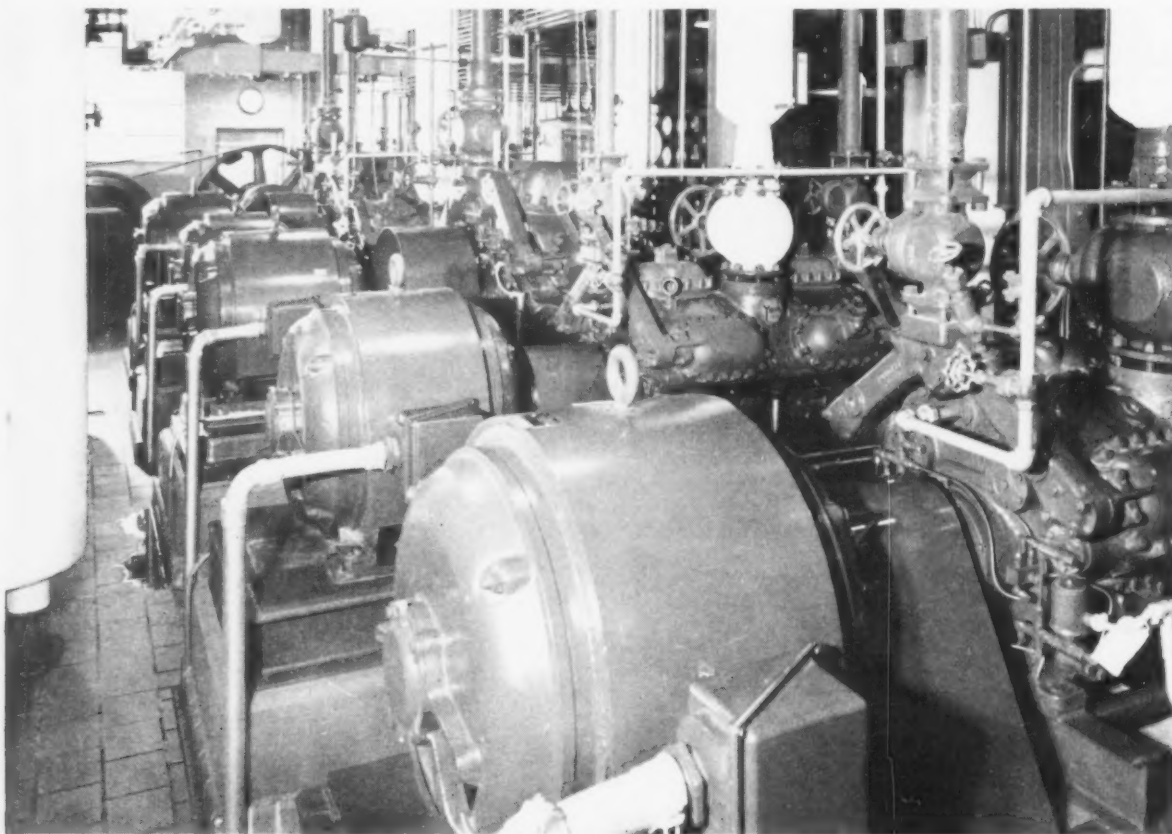
**NEW GISHOLT FASTERMATIC CONTROL PANEL**—simple toggle switches govern basic machine functions, cutting initial setup time in half. Master reference card is used to cut setup time still more on re-runs.



**HEXAGON FEED CONTROL DRUM**—positioning of adjustable flat bars on each face determines rate of feed. Thumbscrew actuator pins in slots on each face determine point of change from traverse to feed and length of feed.



**FASTERMATIC TURRET SADDLE** is hydraulically powered for indexing and longitudinal movement. Automatic cycle easily set up with turret double- or triple-tooled. **CROSS SLIDES**—front and rear—operated by forward movement of turret saddle, can work independently, or together, with any turret face.



## Solve big motor starting problems with Wagner Increment Motor-Starter Combinations!

Eliminate "across the line" starts —  
cut voltage drop and line disturbance

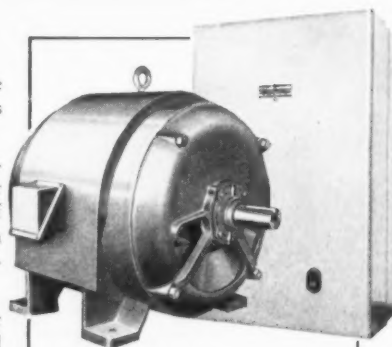
This line of Wagner Increment Start Motors, ranging from 60 to 150 hp, and operating at speeds from 575 to 1160 rpm, drive compressors in a Memphis industrial plant. The motors start quickly and easily, with a minimum of line voltage disturbance, because they are designed for increment starting and are furnished with increment type starters.

Wagner Increment Motor-Starter Combinations provide *low cost control*...do not interrupt current between "start" and "run", as is the case with auto-transformer type starters...do not affect the running charac-

teristics of the motors...yet fully meet the polyphase motor starting recommendations of the AEIC-EEI-NEMA.

Wagner two-step motor and starter combinations are suitable for most applications. For installations where unusually low inrush of starting current is required, Wagner can furnish 3, 4, 5, or 6 step increment motor-starter combinations.

For more information about these Wagner part-winding motor-starter combinations, and how they solve big motor starting problems, call the nearest of our 32 branches or write for Bulletins MU-128 and MU-195.



Type RP polyphase motor  
— in ratings to 500 hp. with  
increment type starter.



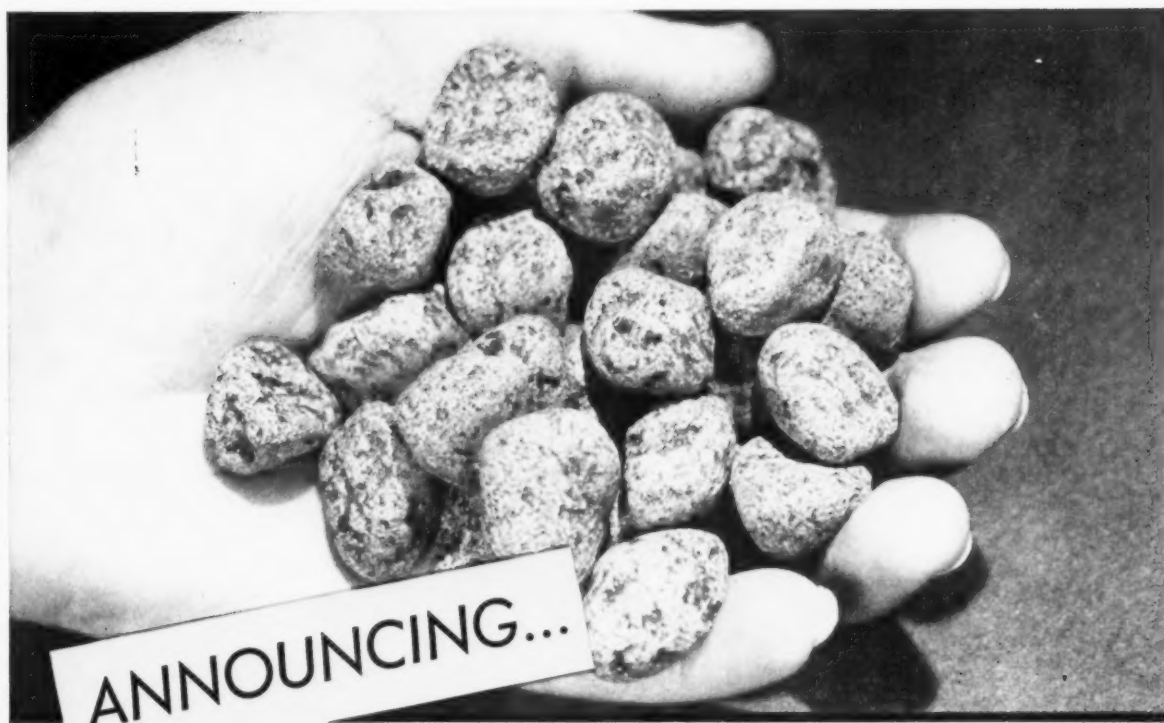
MS7-9B

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

**Wagner Electric Corporation**  
6403 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC





# A big step forward in barrel finishing

*Improved ALUNDUM\* TUMBLEX\* "A" abrasive brings you many new "Touch of Gold" advantages*

The new Norton TUMBLEX "A" abrasive has exceptionally long life . . . great resistance to wedging in work-piece crevices . . . adds attractive lustre . . . and can handle the widest variety of parts.

It performs several operations at once — removing flash, scale, tool marks and burrs, while forming radii and finishes to the required microinch.

It is also better sized, more uniform in shape and available in a wider range of sizes.

## Send Your Work Samples

to our enlarged Sample Processing Department — and include a finished piece. We will barrel finish the samples with new TUMBLEX "A" abrasive — or any other Norton tumbling abrasive that may be more suitable — and return full information telling you exactly how you can improve product quality and cut finishing time and costs. NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors around the world.

G-310

### SIZES NOW AVAILABLE

No.	Size	No.	Size
00	1 1/2" to 2"	3 1/2	3/16" to 1/8"
0	1" to 1 1/2"	4	1/8" to 3/16"
1	3/8" to 1 1/8"	5	3/16" to 1/4"
1 1/2	1 1/8" to 3/8"	6	1/4" to 3/8"
2	3/16" to 1/4"	8	3/8" to 1/2"
2 1/2	1/2" to 3/16"	10	standard 10 mesh
3	3/4" to 1/2"	12	standard 12 mesh

*Every one of these sizes has the advantages that will increase the value of your finished parts and cut the costs of your general barrel finishing. That's how improved TUMBLEX "A" abrasive will step up your profit-boosting "Touch of Gold" to a new high.*



*Making better products . . . to make your products better*

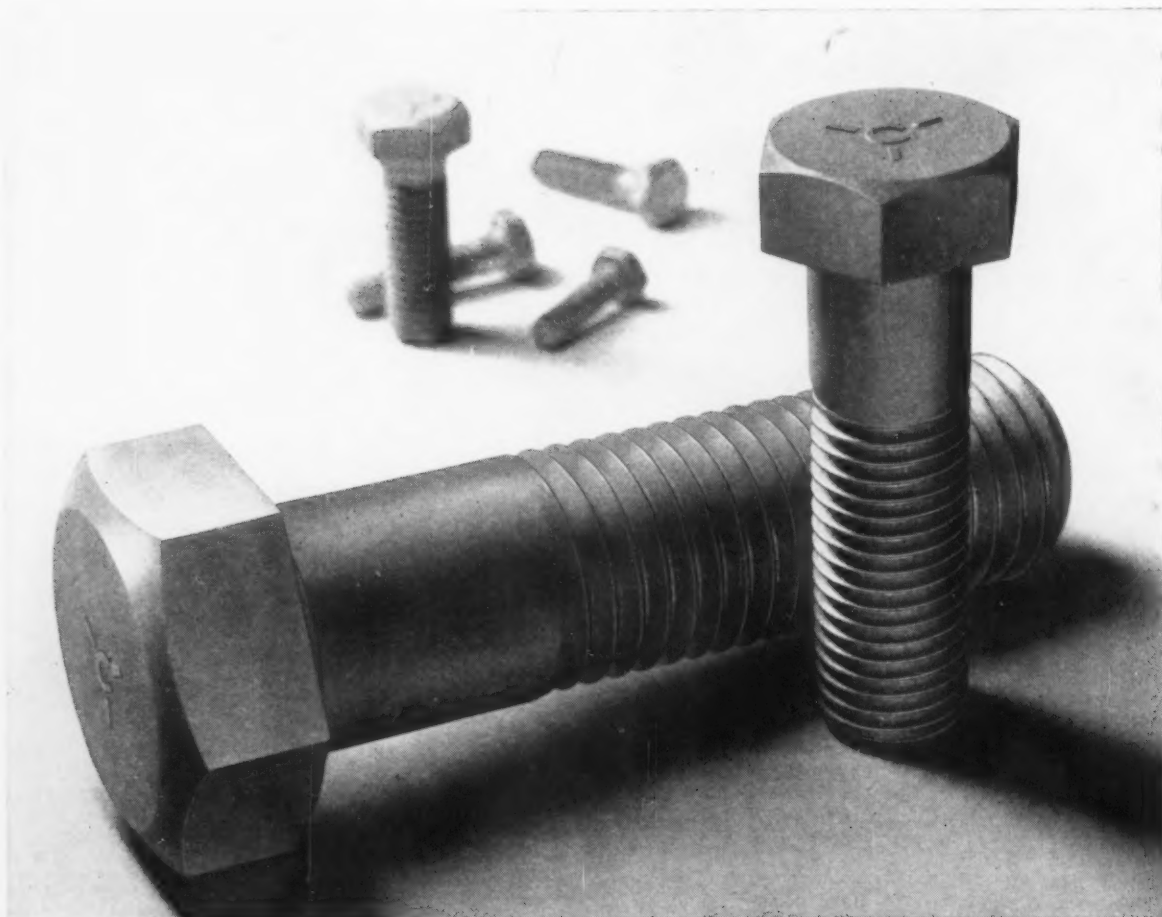
### NORTON PRODUCTS:

Abrasives • Grinding Wheels • Grinding Machines • Refractories

### BEHR-MANNING DIVISION:

Coated Abrasives • Sharpening Stones • Behr-cat Tapes

\*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries



## Cleveland upset forged hexagon head cap screws make your assemblies stronger and safer

Cleveland's upset forging process puts an extra measure of fastener muscle into your assemblies. The flow lines in every hexagon head cap screw follow the contour of the head, eliminating the planes of weakness along which shear might occur under the dynamic stress of heavy impact and vibration.

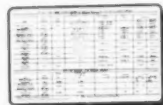
Cleveland hexagon head cap screws are manufactured from a wide variety of steels and in many different tensile strengths. In most cases, a Cleveland standard will serve as well as a special and will be much less expensive. Check the chart at the right for the one best suited to your needs. Then see your local Cleveland distributor. He stocks Cleveland hexagon head cap screws in sizes and physical properties to meet the most exacting demands of modern machinery design. All standard size cap screws in bright and quenched and tempered steels are available without delay—alloy steels on short notice. And remember, your distributor is backed by the most up-to-date production facilities and the largest factory stock of hexagon head cap screws in the world.

**TENSILE STRENGTHS OF CLEVELAND HEXAGON HEAD CAP SCREWS**

Product	Size, in.	Tensile Strength, psi
Bright	Up to $\frac{7}{16}$ incl. $\frac{1}{2}$ to $1\frac{1}{4}$ incl. Over $1\frac{1}{4}$ to $1\frac{1}{2}$ incl.	85,000—105,000 75,000—100,000 65,000 min.
Quenched & Tempered (SAE Grade 5)	Up to $\frac{1}{4}$ incl. Over $\frac{1}{4}$ to 1 incl. Over 1 to $1\frac{1}{2}$ incl.	120,000 min. 115,000 min. 105,000 min.
Quenched & Tempered (SAE Grade 6)	Up to $\frac{1}{4}$ incl. Over $\frac{1}{4}$ to 1 incl.	140,000 min. 133,000 min.
Alloy (SAE Grade 7)	Up to $1\frac{1}{2}$ incl.	130,000 min.
Alloy (SAE Grade 8)	Up to $1\frac{1}{2}$ incl.	150,000 min.
Bright	Over $1\frac{1}{2}$ to $2\frac{1}{2}$ incl.	55,000 min.
Quenched & Tempered	Over $1\frac{1}{2}$ to $2\frac{1}{2}$ incl.	90,000 min.
Alloy	Over $1\frac{1}{2}$ to $2\frac{1}{2}$ incl.	125,000 min.

Note: Higher physicals, through use of selected alloys, can be supplied on special order.

GET YOUR COPY NOW — Pocket-size card giving you physical properties of Cleveland hexagon and socket head cap screws and Cleveland Place bolts.



**THE CLEVELAND CAP SCREW COMPANY**

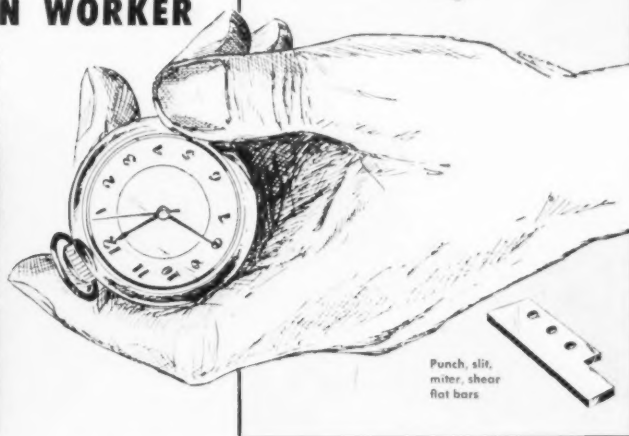
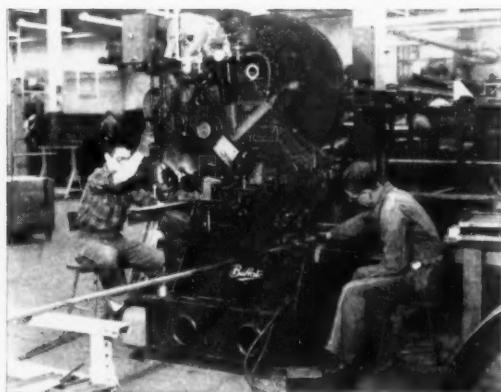
4444- 1 Lee Road, Cleveland 28, Ohio

WAREHOUSES: Chicago • Philadelphia • New York • Los Angeles

# ALL THESE OPERATIONS ON ONE FAST MACHINE!

If your shop does two or more of the operations shown here, you'll be money ahead with a "Buffalo" Universal Iron Worker! Takes the space of one machine, does the work of six — two operations at once! No tool changes required. Built to take the strain and shock of your heaviest production or maintenance work, the frame is of rigid arc-welded heavy steel plate, and the one-shot lubrication system means minimum maintenance. Write for Bulletin 360 for details on the "Buffalo" Universal Iron Worker and its big brother, the "Buffalo" Unistructural Iron Worker for your heaviest structural work.

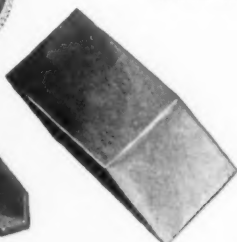
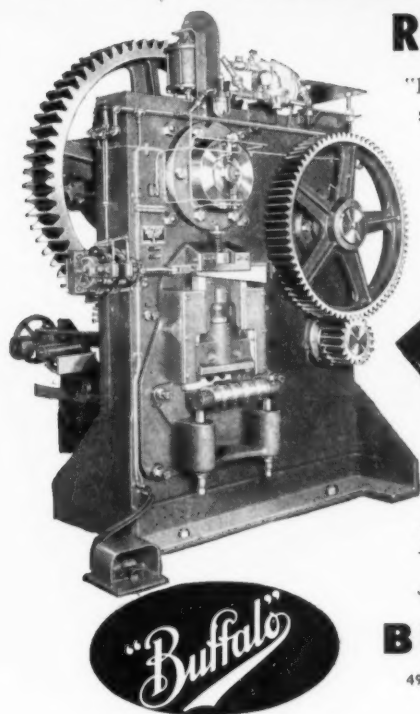
## "BUFFALO" UNIVERSAL IRON WORKER



## RAPID, CLEAN BILLET SHEARING!

"Buffalo" Billet Shears are saving money for forging shops by their high-speed dividing of round and square billets with clean, square cuts. Because the "shearing" is actually a straight *fracture*, there is no "smearing" to conceal possible porosity, as with burning or sawing — resulting in better inspection. 11 sizes to handle up to 10" rounds and 9" squares at 6 strokes per minute — correspondingly higher speeds in the smaller sizes.

Write today for Bulletin 3295-C.



## "BUFFALO" BILLET SHEARS



## BUFFALO FORGE COMPANY

492 BROADWAY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING

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Largest bronze centrifugal casting ever made, 54 1/2" O.D. x 47 1/2" I.D. x 346 1/2" long. Charge weight—72,300 pounds.

*At Sandusky,*

## **GIANTS ARE ROUTINE...**

Small wonder. We serve giant industries . . . paper-making, ship-building, metalworking, atomic energy, petro-chemical, and others . . . with centrifugally cast cylinders and tubular parts, many of which can't be made by any other process to the exacting standards required.

It's the 47 years of specialized experience coupled with unequalled manufacturing facilities . . . that makes it routine for our engineers and production teams to cast and machine cylinders from 7" to 54" O.D. and up to 33 feet in length . . . in a wide range of alloys meeting

special performance requirements.

Do you need a giant cylindrical form . . . or a small one . . . machined to exact working dimensions? Send us your specifications; we'll reply promptly.

**Sandusky Centrifugal Castings offer you 4 important advantages:**

1. **SUPERIOR MECHANICAL PROPERTIES**—to meet exacting design requirements
2. **UNIFORM SOUNDNESS**—free from harmful inclusions and porosity
3. **HIGHEST QUALITY**—to insure long, dependable, trouble-free service
4. **JOB-READY CASTINGS**—machined to your exact specifications, eliminate extra costs from rejects, down-time, loss of production

CENTRIFUGAL CASTINGS

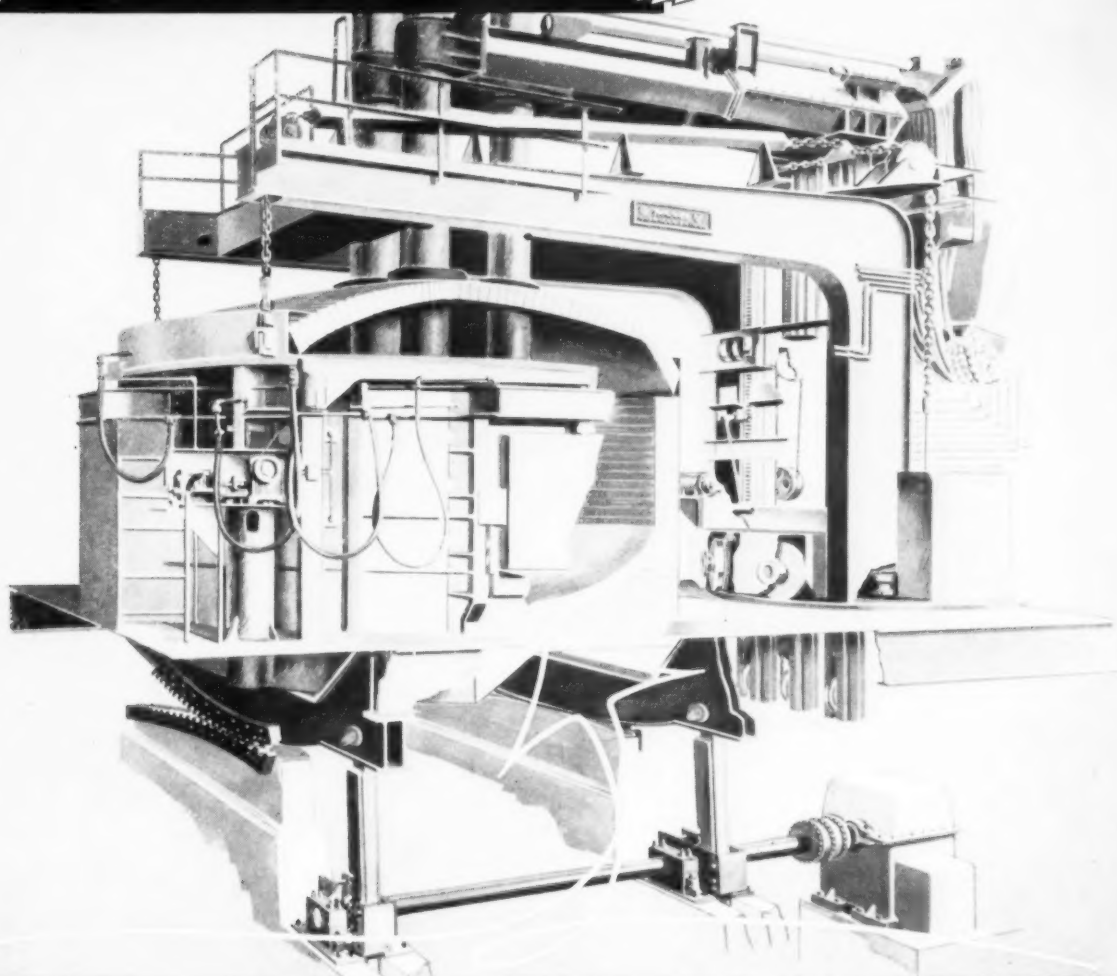
***Sandusky Foundry & Machine Company***

SANDUSKY, OHIO • Stainless, Carbon, Low Alloy Steels—Full Range Copper-Base, Nickel-Base Alloys





**Exclusive with the Heroult:**



## Flat Bottom Shell

**T**HE EXCLUSIVE Flat Bottom Shell construction of Heroult's NEW electric furnace facilitates installation of the hearth lining, resulting in lower refractory costs and shorter down time for relining.

The advanced Flat Bottom design of the NEW Heroult furnace provides maximum protection against burnout.

Flat Bottoms also permit the use of thicker refractories at the sides of the hearth, resulting in more uniform bath temperatures, essential for the production of quality steels.

The simple, rugged supporting structure possible with the Flat Bottom Shell makes the removable shell feature economically feasible.

NEW Heroult furnaces are available in a range of sizes capable of holding capacities from 6,000 to 400,000 pounds. You can select door charge or top charge models, with gantry or swing top moving roofs; there is available special induction stirring equipment and duplexing and non-ferrous furnaces.

Heroult's specialists can advise you on the furnace best suited to your needs—and they can install it for you.

For the finest electric furnaces available anywhere, look into the exclusive features of the Newly Designed Heroult. Our nearest contracting office can supply you with complete details.

**Heroult**  
ELECTRIC  
MELTING FURNACES



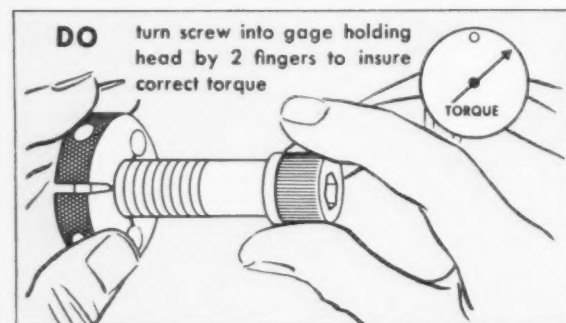
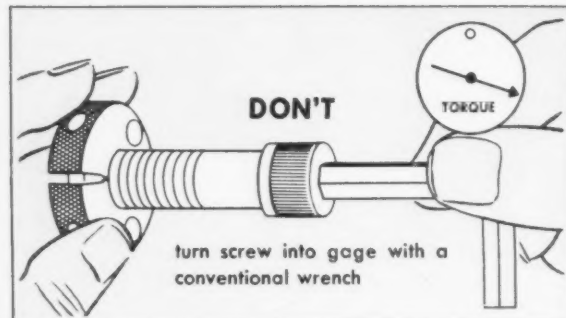
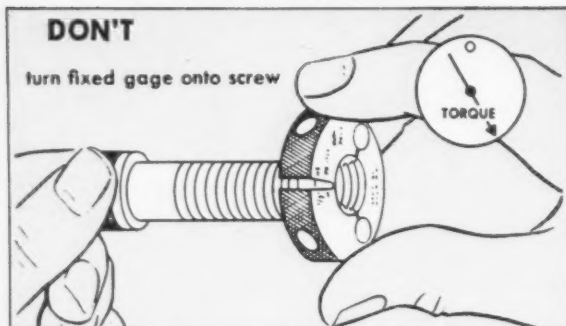
**AMERICAN BRIDGE DIVISION**  
UNITED STATES STEEL CORPORATION

GENERAL OFFICES:  
525 WILLIAM PENN PLACE, PITTSBURGH, PA.

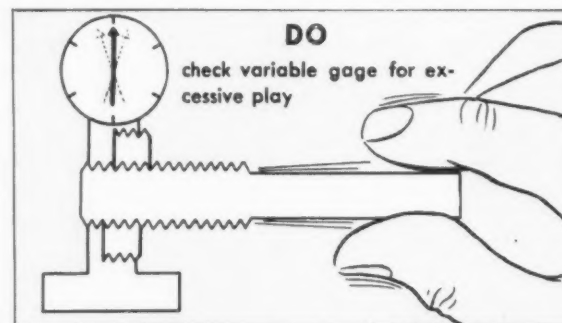
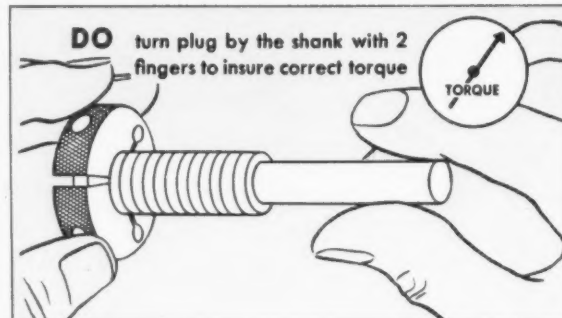
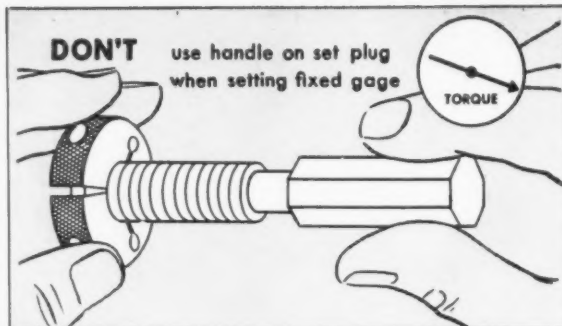
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UNITED STATES STEEL EXPORT COMPANY NEW YORK

UNITED STATES STEEL

When measuring high limits



When gaging gages



These illustrations from new SPS booklet show some of the do's and don'ts of gaging precision threads.

## 3A threads: what they are; how to gage them — new SPS booklet tells all

Threads made to Class 3A fit are the most precise in general use in industry. But you do not always get the 3A precision you specify. Because of many different gaging techniques that yield varying results, screws with threads well outside the Class 3A tolerance limits often pass inspection.

SPS has prepared a new booklet on this subject. It explains clearly what Class 3A threads are and the pros and cons involved in the widely varying gaging techniques in use today. It reviews the gaging of high and low limits of 3A threads, sampling techniques, and even the methods of gaging gages.

All standard UNBRAKO socket screw products fall within specified tolerance limits *no matter what method is used to gage them*. Leading industrial distributors carry complete stocks. Unbrako Socket Screw Division, STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.



Form 2239, "Class 3A Threads: what they are; how to gage them." 16 pages, with many illustrations. Write for free copy today.



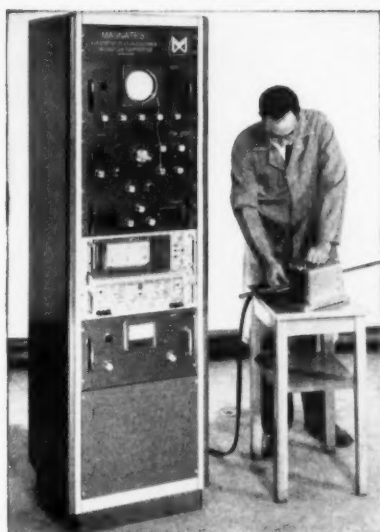
SOCKET SCREW DIVISION

STANDARD PRESSED STEEL CO.

**SPS**

JENKINTOWN, PENNSYLVANIA

THE IRON AGE, May 30, 1957



The **MAGNATEST FW-400 Series** is electronic, eddy current equipment for non-destructive testing of non-magnetic rod, wire, or tube from 1/64" to 3" diameter. The test is fully automatic and can run at high mill rates (up to 400 and 500 f.p.m.). With the FW-400 such problems as seams, cracks, concentrated porosity, inclusions, stringers, laps, and splits may be detected at the level required. Diameter variation, embrittled areas, and scale are other conditions found with the unit.



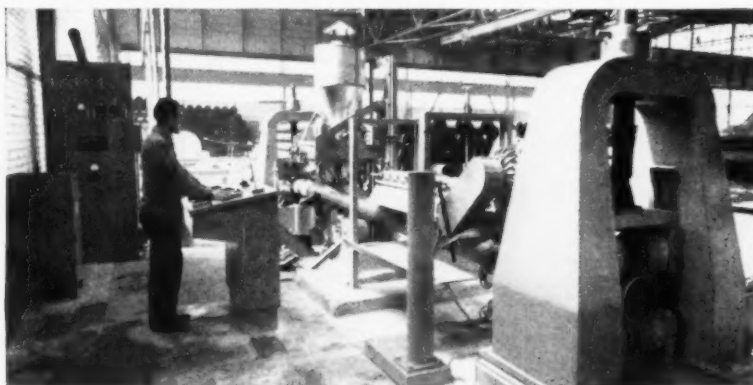
**SEMI-AUTOMATIC MAQ 1694 MAGNAFLUX.** Unit speeds end inspection for rod mills. A special conveyor extension carries short coil-end samples through a Magnaglo bath. They are then magnetized automatically and pass on to the curtained "black light" booth where defects, if any, show up as glowing indications on the rod ends. The Rate: 15 per minute. This system has cut inspection time in half and has eliminated the need for most acid etching equipment at several mills.

**HALLMARK  
OF QUALITY IN  
NONDESTRUCTIVE  
TEST SYSTEMS**



Write for complete details concerning any of the above case studies or other tests in mills. Also, ask for our new booklet on "Lower Manufacturing Costs."

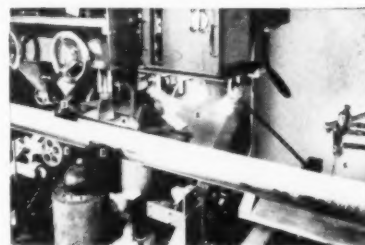
## Case Studies: NONDESTRUCTIVE TESTING SYSTEMS



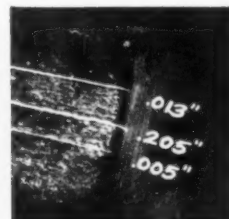
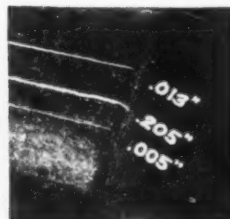
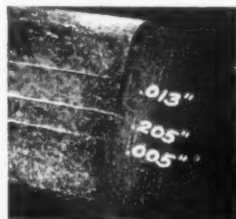
This picture shows the first new fully automatic Magnaflux PYQ equipment used in a steel mill on pipe weld testing. The man operates the mill itself, the Magnaflux unit uses photoelectric inspection.

## New Methods Developed for Mill Tonnage Testing

Nondestructive testing has grown from a "sometimes" thing to a full time production tool in many mill operations. New techniques and methods have been developed for every type inspection. Whether the mill produces rods, tubes, rounds, squares, bars or billets, M offers semi or fully automatic inspection systems for practically every need. For instance, the type of defect most commonly found in resistance welded steel line pipe is longitudinal cracks in the weld. As shown in the illustrations above and at the right, such cracks can now be detected automatically right after welding. The crack is spray-marked on the pipe. This is done at production line speeds and without operator optical fatigue factors.



This unit tests pipe welds at rates over 100 ft. per minute. Magnaflux indications of defects are formed at location #4 in photo above. The new SN-100 Series photoelectric scanner automatically "sees" these defects at #5 area. This actuates #6 spring, wherever crack is present — to mark defect with paint.



### MAGNAGLO INSPECTION VARIES TO FIND ONLY WHAT YOU WANT TO SEE!

After you decide what constitutes your own serious flaw, Magnaglo can help you achieve consistent quality in production. The magnetizing current and Magnaglo application can be varied and controlled to produce exactly the degree of sensitivity required for your quality standards. The photos above show the same billet inspected under varying techniques and amper-

ages, to suit different billet conditioning needs.

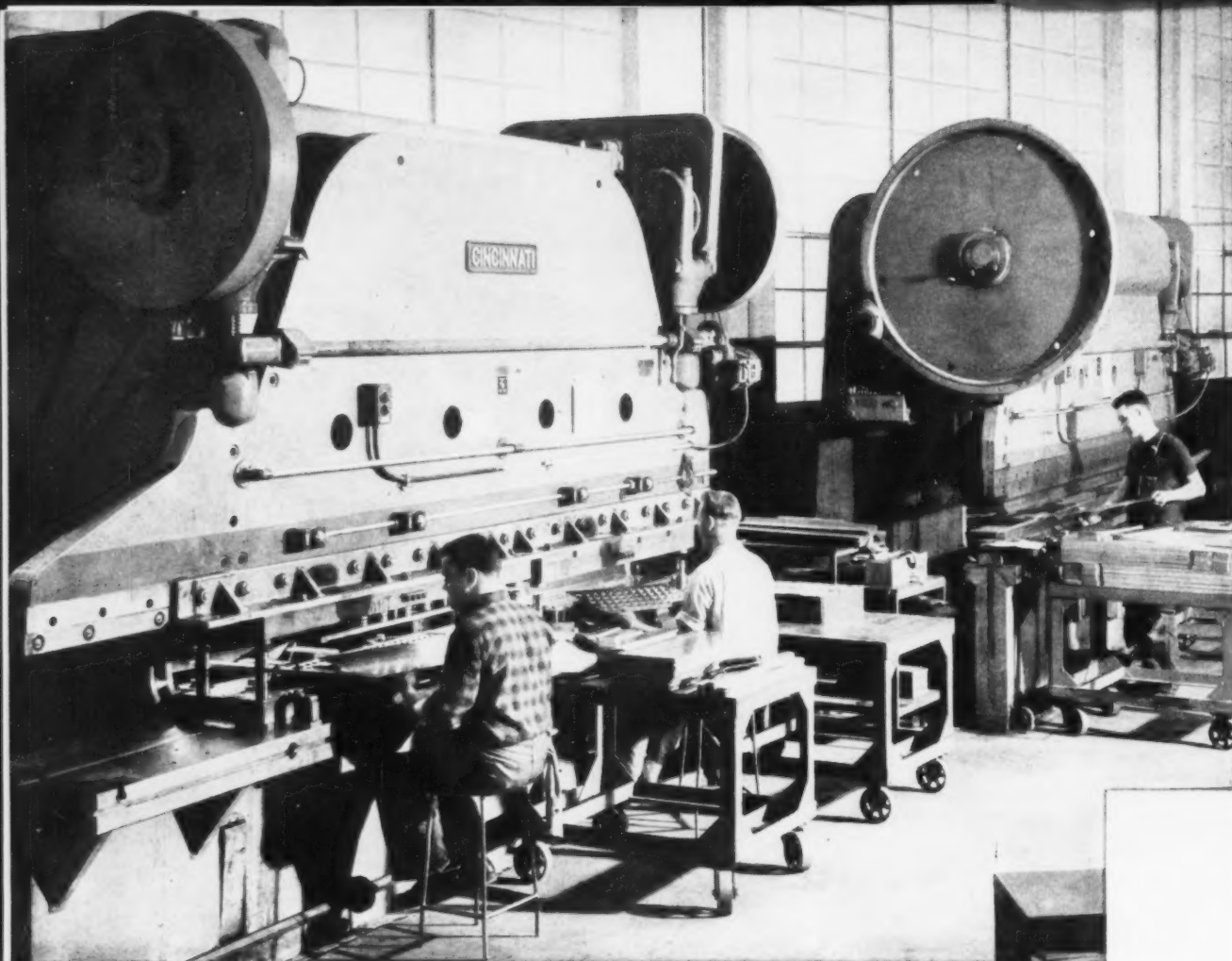
Note: variance of intensity of the Magnaglo indications. You can show or not show any depth seam you require, for each job you run.

Zyglo can be similarly employed on non-magnetic billets, to increase yield and lower conditioning costs.

Take Your Inspection Problems to the House of Answers . .

## MAGNAFLUX CORPORATION

7302 W. Lawrence Avenue • Chicago 31, Illinois  
New York 36 • Pittsburgh 36 • Cleveland 15 • Detroit 11 • Dallas 19 • Los Angeles 58



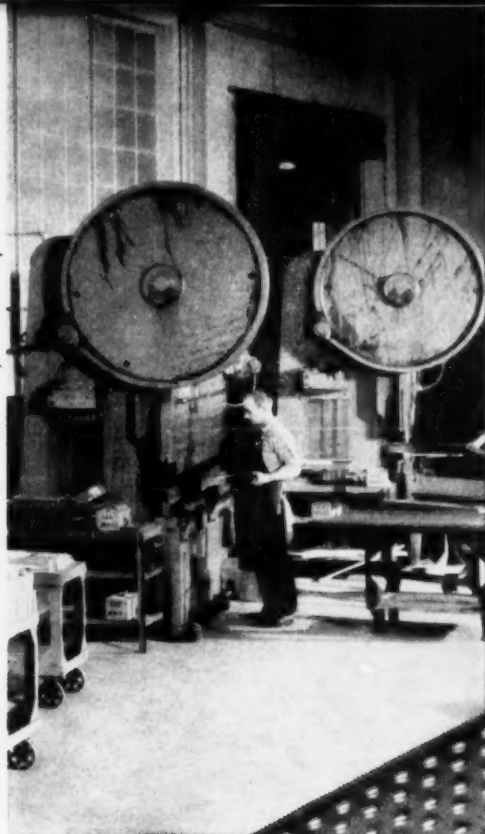
BATTERIES of accurate  
**CINCINNATI Shears  
and Press Brakes**

*cut production  
costs*

at THE TRANE COMPANY, La Crosse, Wisc.







Steel tube support plate for cooling coils.

Three Cincinnati Shears and four Cincinnati Press Brakes are profitable producers in this finely equipped shop.

The battery of shears produces accurate blanks, sheared to micrometer accuracy, which are later formed and pierced on the Cincinnati Press Brakes.

The photo at left shows multiple holes being pierced and extruded to a tolerance of  $\pm .002$ " in a steel tube support plate for Trane cooling coils. On this operation alone, floor to floor

time **was cut from 3-1/3 minutes to 1/2 minute** by the use of Cincinnati Press Brakes. The speed and outstanding accuracy of these Cincinnati Machines have lowered costs and increased quality of the air conditioning equipment manufactured by this leading company.

Write **Department B** for Catalog S-7R on Cincinnati All-Steel Shears and Catalog B-4R on Cincinnati Press Brakes. We also suggest you consult our Application Engineering Department about your shearing and forming problems.

# THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U. S. A. SHAPERS • SHEARS • PRESS BRAKES



# HOW TO HANDLE THE

No "heft" too heavy for brawny, beefy Republic Steel Storage Equipment. It's built to handle the heavyweights—and how! Shelving and racks made by Republic's Berger Division turn static storage facilities

into dynamic materials movement centers. Republic Storage Engineering specialists will help you apply this superb equipment to your materials movement problems . . . show you how to handle the heavyweights. Send coupon.



**REPUBLIC SECTIONAL BAR RACKS.** Each upright supports 40,000 pounds of bar stock, shafting, pipe, when loaded both sides. Load it, unload it from either end or either side. Handles short or long stock with equal ease and convenience. Made to any desired length in multiples of 35- or 70-inch units. Uprights are 96 inches high, with 11-inch brackets adjustable at six-inch intervals.

**WEDGE-LOCK LONG-PARTS RACK.** None stronger! Patented Wedge-Lock construction grips tighter as load is increased. Load it and unload it from either end. Safe, sure storage . . . capable of carrying enormous weight . . . and classifying stock so that it can be put into production fast. Built for heavy-duty applications from economical standard Wedge-Lock posts and "U" bars. Send coupon for catalog.

# REPUBLIC



*World's Widest Range of Standard Steels*

# HEAVYWEIGHTS:



**REPUBLIC WEDGE-LOCK STEEL SHELVING.** World's strongest. Capable of exceptionally high stacking. Patented Wedge-Lock construction means that the heavier the load, the tighter the grip. Wedge-Lock includes all three prime essentials of good shelving: (1) A post that will not buckle, (2) A reinforced shelf that does not sag, (3) A concealed sway-proof joint. Unlimited shelf arrangements. Send coupon for facts.



**INSERTS, DRAWERS, SHELF-DIVIDERS,** and accessories to fit Republic Wedge-Lock and Republic Convertible Shelving. All designed to solve every small-parts storage problem, to simplify inventories, prevent loss, speed handling and parts finding. Republic Storage Engineering Specialists will help you select and lay out the shelving equipment you need most efficiently and economically.



**REPUBLIC STEEL LOCKERS.** Happy solution to personal storage needs of personnel . . . indispensable wherever clothing must be changed or stored. Safe, pilfer-proof, tamper-proof. Wide choice of styles and locking mechanisms. Banderized for lasting paint adherence and resistance to damage. Republic's Berger Division will help you plan your new or enlarged locker system and can handle all installation details. Write for facts.

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*and Steel Products*

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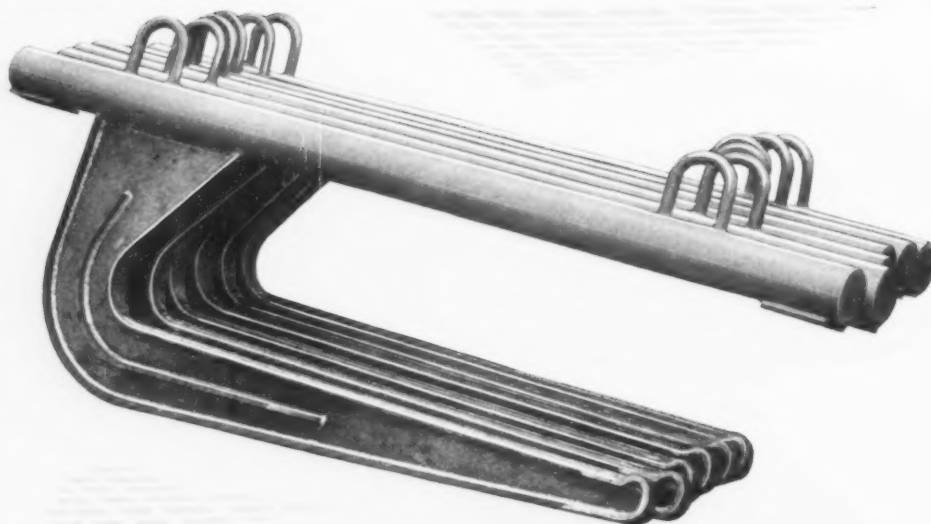
- ☐ Wedge-Lock Steel Shelving    ☐ Sectional Bar Racks  
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At Portsmouth Division  
**DETROIT STEEL CORP.**

# 14 WELDCO Pickling Hooks

*Still "Going Great" after 8 Years' Service!*

Amazing, but true! In Detroit Steel's Portsmouth Plant, 14 WELDCO Monel Pickling Hooks are still giving satisfactory service . . . 8 years after installation. That's because WELDCO hooks — like the ones shown above — are especially built for long, heavy-duty service. These sturdy hooks are lightweight but tough . . . handle payloads up to 4,000 pounds, are exceptionally corrosion-resistant, and outlast heavy cast hooks 2 to 3 times.

WELDCO hairpin hooks are used in many other steel plants, too, because their superior design makes them readily adaptable to all types of handling equipment. Let us show you how to cut pickling costs and improve your production methods. Your phone call or letter will bring complete information on WELDCO hooks . . . the hooks made for long, economical, heavy-duty service!

**WELDCO**

**THE YOUNGSTOWN WELDING  
& ENGINEERING COMPANY**

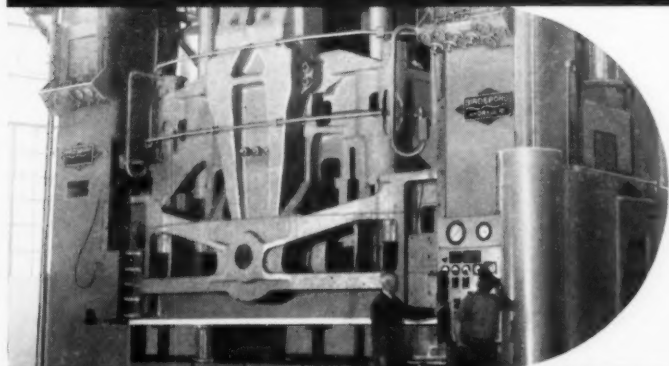
3722 OAKWOOD AVE. • YOUNGSTOWN 9, OHIO



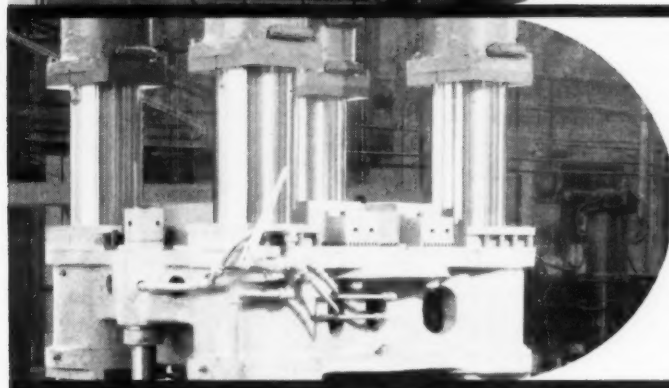
# Special Press Design Features ... Found Under This Seal ...



- 1 Press controls designed to meet specific applications and future adaptations. Automatic interlocking of controls assures accurate sequence functioning of various press components—minimizes dead cycle time.



- 2 Customized close manufacturing tolerances on guide ways assure precision alignment of the platens on this Birdsboro 8000-ton press.



- 3 Rugged design and construction of this 1500-ton Birdsboro press minimize misalignment and assure accurate mating of dies.

In Birdsboro Hydraulic Presses, you can get the most advanced design features in existence. Hydraulic and electric equipment is fully utilized, and each press is piped, wired and tested before shipment for easy and rapid erection and installation. Your Birdsboro repre-

sentative can supply you with a long list of Birdsboro features. Call him in soon. Main office and plant: Birdsboro, Pa., District Office: Pittsburgh, Pa., Subsidiary: Engineering Supervision Co., 120 W. 42nd St., New York 36, N.Y.



## BIRDSBORO

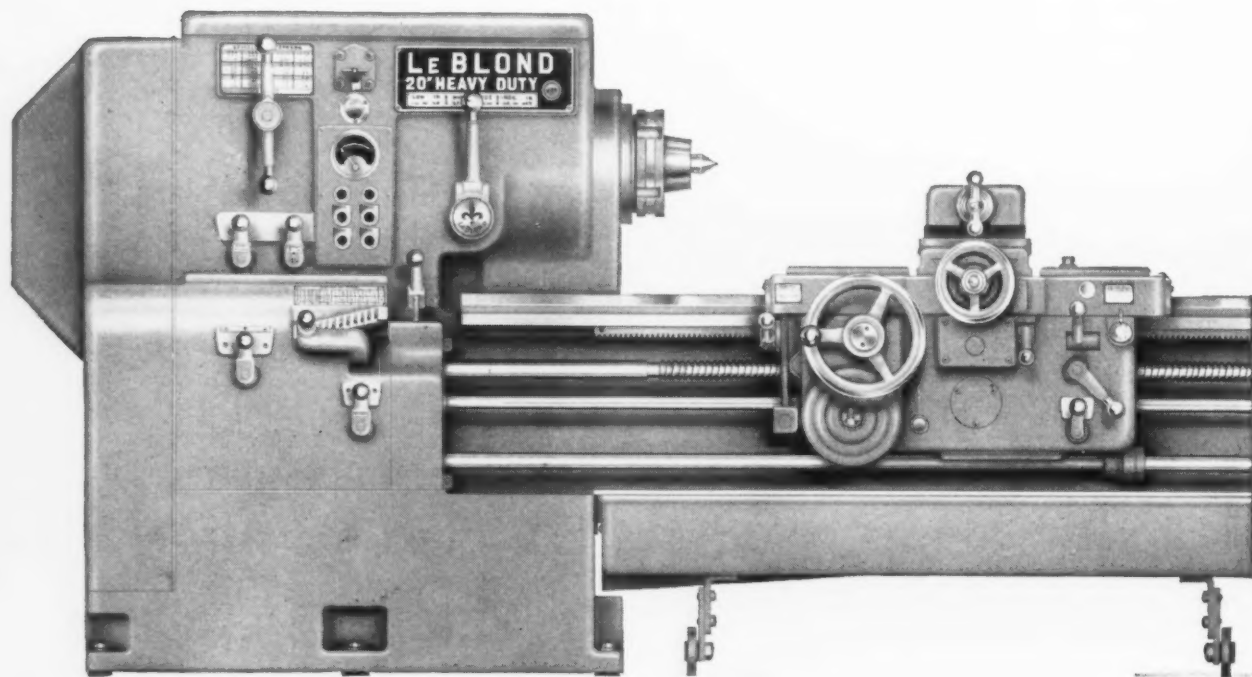
STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES (Metalworking and Extrusion) • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

# ALL NEW

## 20" Heavy Duty

power and toughness to use all the



The new LeBlond 20" gives you all the rugged design and construction of the toughest heavy duty turning machines in the world. Power, rigidity, stamina—dramatic new features and new human-engineered operator convenience. Here's why you'll want LeBlond 20"s fighting the production battle on *your* side!

**Smooth, usable 40 H. P.**—to get the most from today's advanced tools! In the headstock, extremely short, heavy shafts and fine-pitch precision-ground gears deliver power efficiently to the spindle—with minimum no-load horsepower. Plenty of power at lowest speeds, too! For example, at 10 rpm you can take a cut as deep as  $\frac{1}{2}$ " in 16" diameter work, feeding at .063 ipr!

**36 high-power speeds.** Selections made in fine increments, particularly in the low range where small differences in

rpm make big differences in tool life. 36 speeds, 10 to 1300 rpm in geometric progression. The tough, forged spindle is supported in 3 places by 5 bearings. DC speed selection at apron available with simplified gearing in head.

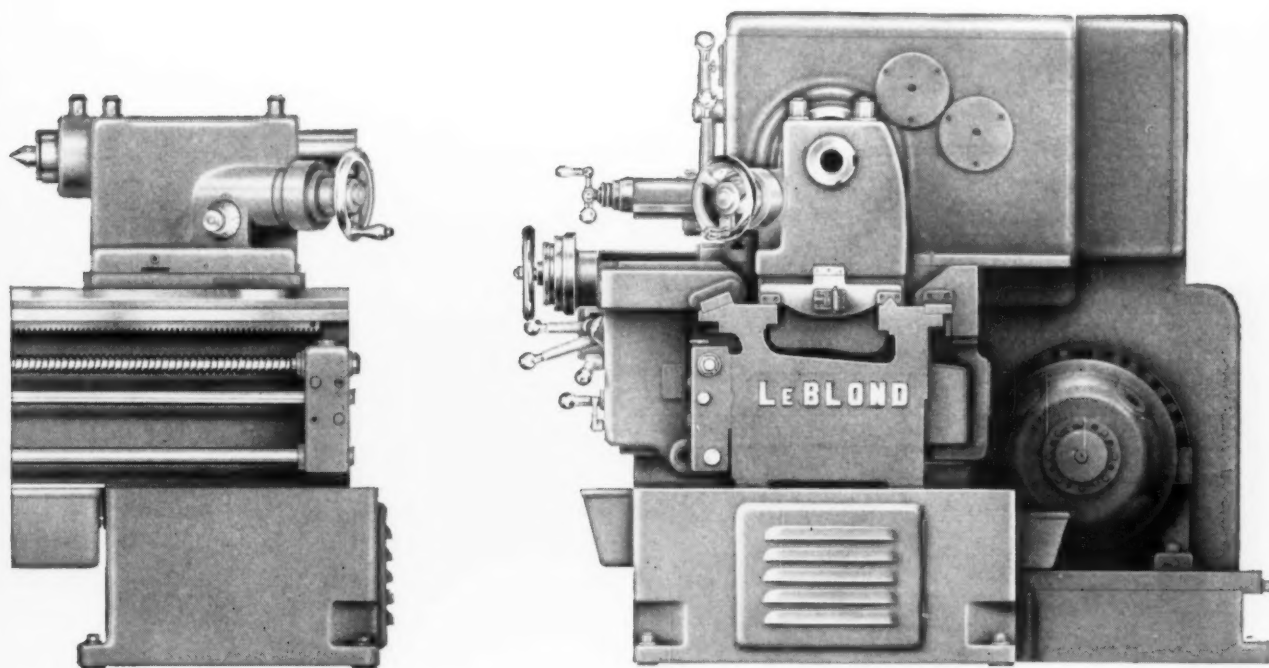
**All-new 2-speed tailstock.** Tailstock spindle travel is geared for conventional and low speed. When drilling, for example, push handle *in* to drill at slow, powerful feed; pull handle *out* to retract quickly. Tailstock can be moved by power. Exclusive LeBlond worm and rack construction puts handwheel at a convenient angle to the operator, provides exceptionally long travel and positive safety lock against thrust. Full-length support of spindle, even when extended.

**Scientifically planned operator convenience.** Human-engineered for operator convenience, the controls of the

# LeBLOND

## Engine Lathe

**bite of today's ceramics and carbides!**



new LeBlond 20" were scientifically studied for shape, size and location. To simplify speed and feed selection, levers are always moved toward operator position for increase, away for decrease. Speed selection is color coded. Spindle is sensitively controlled by means of electric clutch and brake. 4-directional power rapid traverse controlled by single lever. In addition, built-in horsepower meter, chasing dial integral with apron and quick-setting diameter reading dials on crossfeed.

Many famous LeBlond features. Hardened and ground replaceable steel bedways with compensating vee-way design, automatic lubrication to head, quick-change box, apron, single-shot to tailstock, hardened and ground crossfeed screw with compensating nut, one-piece apron, flame hardened rack, totally enclosed quick-change box.

**...cut with confidence**

*Call your LeBlond Distributor or write for complete specifications.*



**THE R. K. LeBLOND MACHINE TOOL COMPANY**

*Cincinnati 8, Ohio*

# Sharp Clean Cuts EVERY TIME

Many thicknesses and sizes of metal are cut on this Steelweld Shear every day. Thanks to Steelweld's exclusive MICRO-SET knife adjustment, it is easy to set the knife clearance to the exact amount which will produce the best cut for every plate run through the machine.

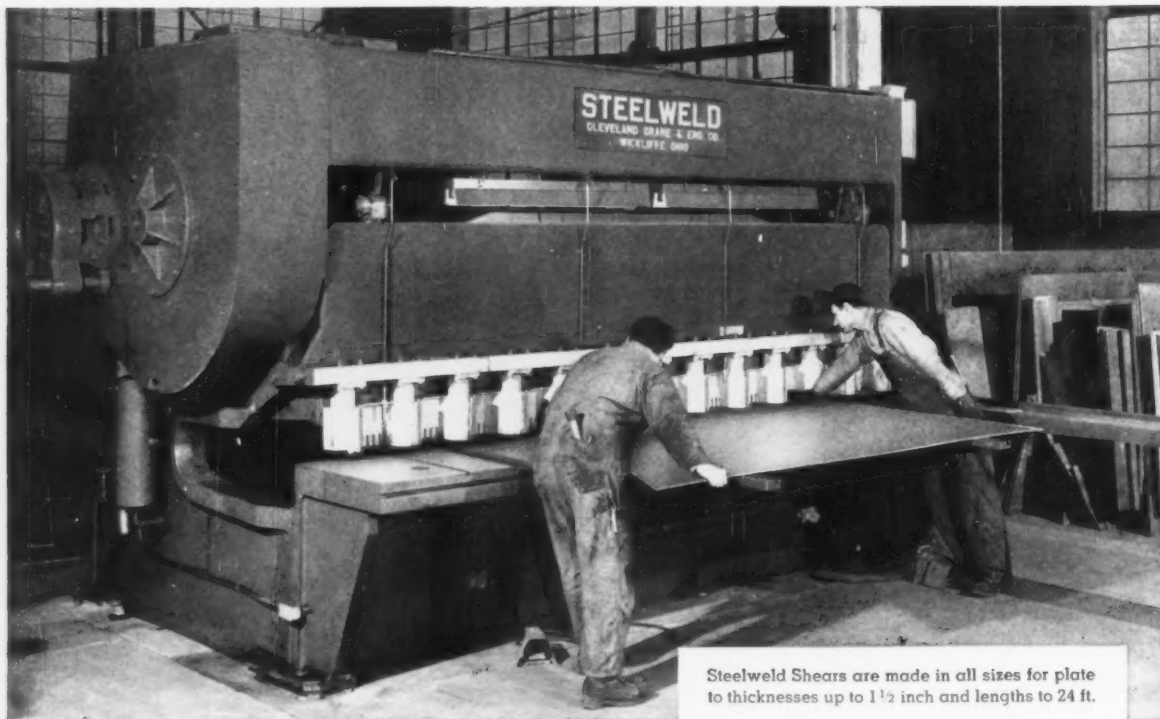
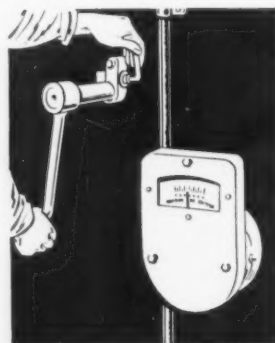
If desired, the knife clearance can be set for an average thickness and all plates cut without changing the clearance. This procedure is used with most shears because to change knife clearance on them is a tedious, difficult operation which usually puts a machine out of service for hours.

In contrast, knife adjustment on Steelwelds is made in a few seconds. It's simply a matter of turning a crank until an indicator points to the figure representing the thickness of plate being cut. No bolts to loosen; no parts to move. There is no need for using "average" knife settings.

The clutch and brake unit is another outstanding feature of Steelweld Shears. As it is air-operated, it is quick, snappy in action. Its low-inertia design assures cool operation, even after long continuous production runs, because energy to be dissipated is minimized and working pressure necessary on clutch and brake facings is greatly reduced.

The many features of Steelweld Shears make it worth your while to get all the facts.

## Because of MICRO-SET Knife Adjustment



Steelweld Shears are made in all sizes for plate to thicknesses up to 1 1/2 inch and lengths to 24 ft.



### GET THIS BOOK!

CATALOG No. 3011 gives construction and engineering details. Profusely illustrated.

### THE CLEVELAND CRANE & ENGINEERING CO.

4846 EAST 282ND STREET • WICKLIFFE, OHIO

# STEELWELD PIVOTED BLADE SHEARS

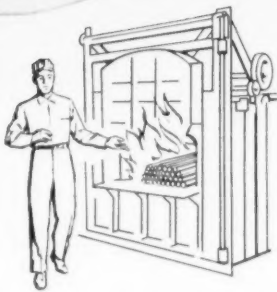


# Stainless by Standard



## ANNEALED

Full annealing is one reason why you get the maximum corrosion resistance in each foot of Standard pipe or tubing.



Standard Welded Stainless Pipe and Tubing is formed from only the finest strip steel with every emphasis on uniformity and quality. It is welded by the inert gas shielded arc process. No flux or filler metal is added. Then fully annealed to eliminate stresses and assure uniform structure and maximum resistance to corrosion.

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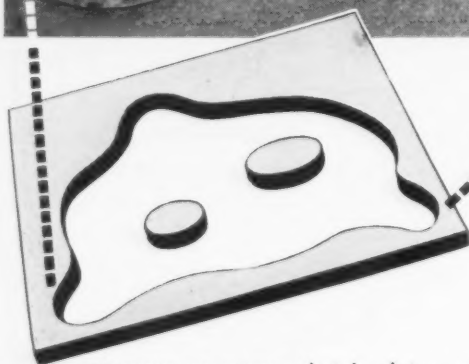


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**This customer saved 46%  
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**T**HESE STAINLESS sketch plates, produced by G. O. Carlson, Inc., saved the customer 46% in shipping costs. If he had bought rectangular plates and done his own cutting, he would have paid freight on excess material which he could not use.

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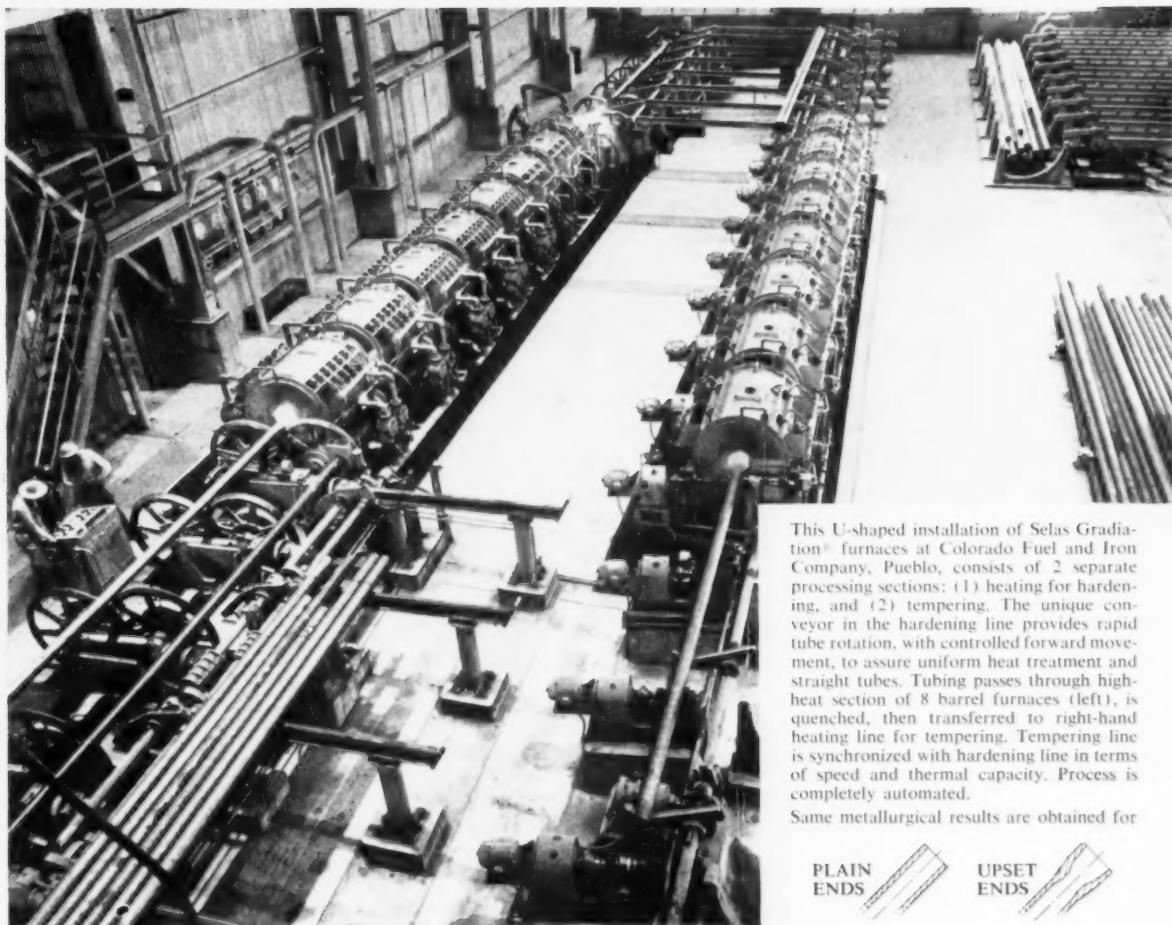
*Stainless Steels Exclusively*  
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This U-shaped installation of Selsas Gradation<sup>®</sup> furnaces at Colorado Fuel and Iron Company, Pueblo, consists of 2 separate processing sections: (1) heating for hardening, and (2) tempering. The unique conveyor in the hardening line provides rapid tube rotation, with controlled forward movement, to assure uniform heat treatment and straight tubes. Tubing passes through high-heat section of 8 barrel furnaces (left), is quenched, then transferred to right-hand heating line for tempering. Tempering line is synchronized with hardening line in terms of speed and thermal capacity. Process is completely automated.

Same metallurgical results are obtained for



## Physical Properties of Deep Well Casing Improved, Uniformity Achieved . . . with Selsas Short-cycle Hardening and Tempering

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With Selsas Gradation, heating for hardening, quenching and short-cycle tempering of steel tubing are performed continuously, automatically. Consistent metal-

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Selsas short-cycle heating is used in four of the five lines producing heat-treated oil well casing and Selsas barrel furnace lines are widely used throughout the steel industry for annealing as well as hardening and tempering seamless tubes; for heating tubes for sizing; for normalizing welded pipe; for annealing and hardening-and-tempering bars.

All are continuous, in-line operations. Compact, fast-heating, gas-fired Selsas furnaces save valuable floor space, are adaptable to variations in production-line speeds.

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*Heat and Fluid Processing Engineers*  
DEVELOPMENT • DESIGN • CONSTRUCTION



# Another MINSTER First in Press Design Operating in Production Lines Since 1953 Has Proved That You Can Get

## More Single Stroke Operations

The exclusive "hidden value" in the Minster MS2 press is Minster's patented Intermediate Shaft Combination Air Friction Clutch and Brake Drive arrangement.

This drive arrangement makes it possible to get a higher single stroke efficiency, based upon rated continuous press speed, and the widest speed selection ever available on large double geared straight side presses.

### Here's what this exclusive Minster feature can mean to you

- More production on manually fed or automated presses.
- Faster starting and stopping . . . more single stroke operations per minute.
- Less flywheel energy loss . . . lower power consumption.
- Reduced clutch wear . . . less maintenance and adjustment.
- You may select either the faster speeds of a conventional single geared machine or the slower speeds of a double geared press. Two-speed drive (optional) allows selection of a speed to fit different type operations.

### How it works:

MS2 presses are double geared and have twin drive gears on the crankshaft. Minster's patented Combination Air Friction Clutch and Brake unit is mounted on a slower turning *intermediate shaft* instead of within the flywheel on the high speed drive shaft.

This means lower contact speed of clutch friction surfaces, resulting in very little heat on linings and less wear.

Flywheel can be run at maximum RPM for maximum energy without limiting speed of operations.

### Additional Minster MS2 Press Features

Minster Recirculating Oil Lubrication system provides continuous oil film on all bearing surfaces . . . allows closer bearing and gib clearances for reduced lash and better slide guiding.

All air, lubrication and electrical systems are complete, enclosed within the press frame line, yet easily accessible. Electrical circuits and pneumatic systems for manual or automated production. Controls mounted within cabinet type uprights.

Massive, box type, four-piece tie rod frame for rigidity.

Precise slide to bed parallelism. Slide fully guided within gibs before midstroke is reached.

Outboard drive sheave for easy belt changing.

All wear surfaces bronze-lined, precision fitted and replaceable.



**Per Minute**



**MINSTER®  
MS2 Presses**

**150 TO 500 TON  
CAPACITIES**

in five widths R to L in each  
capacity—two F to B dimen-  
sions in each capacity.

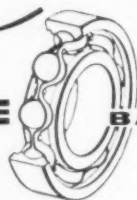
Dimensions meet  
J.I.C. Standards

**THE MINSTER MACHINE COMPANY  
MINSTER, OHIO**

# FACTS

about

**NEW DEPARTURE BALL BEARINGS**



**NOW A**

## **NEW DEPARTURE IN PILLOW BLOCKS**

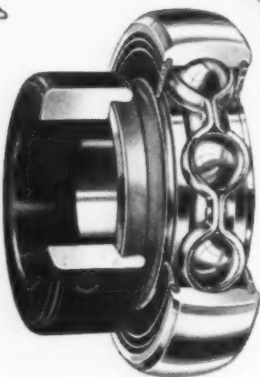


**GREASE SEALED IN  
DIRT SEALED OUT**

with  
**FAMOUS**

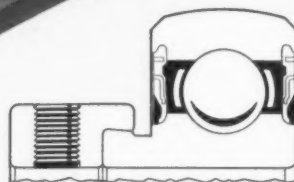


New Departure Pillow Blocks employ the performance-proved New Departure Type AE Adapter ball bearings with spherical O.D. for alignability and steel-reinforced Senti-Seals for long life protection against dirt or grease leakage.



- Clean, rigid, compact design.
- Free of any lubricating fixtures.
- New Departure ball bearings sealed and lubricated-for-life.
- Pillow Blocks easily mounted without special tools.
- Only high capacity precision ball bearings used.
- Accommodates any misalignment.
- 31 shaft sizes,  $\frac{1}{2}$ " through  $2\frac{7}{16}$ ".
- Interchangeable with most makes.

Send for Catalog PBC  
for complete details.



The bearings are easily applied to the shafting and are positively locked in position with an eccentric cam locking collar and set screw.

**BALL BEARINGS MAKE GOOD PRODUCTS BETTER**

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

## Tumble Those Big Parts

A popular conception that barrel finishing only works on small parts isn't justified by the facts. The only size limit on parts is the capacity of the tumbling barrel. Tumbling is successfully applied to jet rotor assemblies that weigh over 1000 lb and have to be hoisted in and out of the barrels.

## Cuts Shell Molding Time

Shell molding investment time required with powdered-resin-and-sand mixtures is said to be almost halved with a British-developed synthetic resin. Three to six lb of the methanol-containing liquid is used to cold coat 100 lb of any sand suitable for shell molding. Adding hexamine equal to 6 pct of the resin weight does the curing. Recommended pattern temperatures range from 350 to 430°F.

## Airframe Awards Shrink

Subcontractors of airframes will face steadily-dwindling business, the Air Force warns. As military aircraft emphasis shifts more and more to missiles, prime contractors tend to do more of their own work. Subcontractors' shares will shrink still further in months ahead, meaning that such firms will have to diversify and get into new lines of work.

## Plan Machine Tool Co-op

Several metalworking firms who operate in the same area plan to form a co-op to make machinery of virtually any type, to specifications. Included in the proposed group are a gear manufacturer, a foundry, a pneumatic engineering firm and producers of textile machines, screw machines, punch presses and tanks.

## Mills Sell Leaded Plate

Leaded steel plate, heretofore chiefly a warehouse item, is scheduled for increased direct mill sales. Though still small in volume compared to most direct-mill items, leaded plate shows a strong potential in some important growth markets. Air

conditioning is one, production of valve-operating mechanisms is another. In addition, leaded plate has won acceptance as a useful die material for molding plastic and rubber.

## Taxes Hinder Handouts

Heavier overseas investments by U. S. Industry to replace government handouts look good in theory. But Congress isn't making this very easy, taxwise. The 52 pct corporate tax rate drains off a lot of potential investment capital. The Administration's 1954 drive to get the rate trimmed isn't being renewed, and foreign-aid officials blame businessmen for not pressing the tax-reduction issue.

## Part Prints In A Hurry

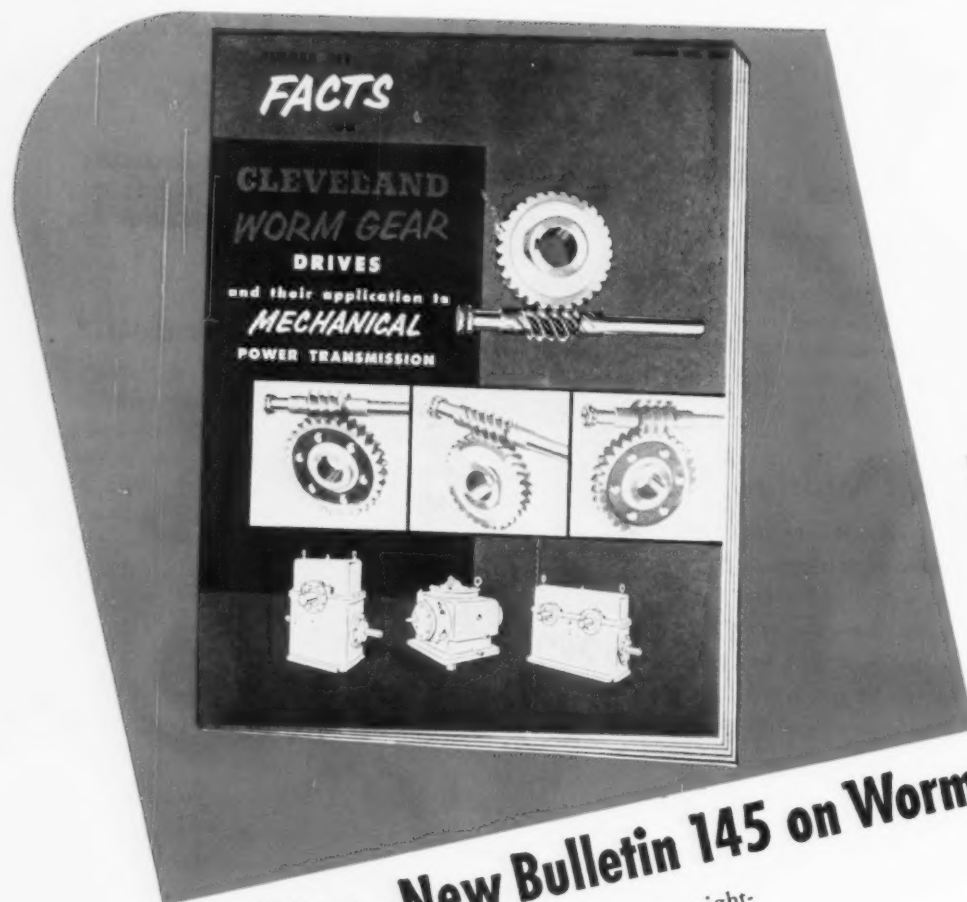
The Navy's Bureau of Aeronautics has a new way to end costly, bulky storage of engineering drawings. It microfilms all drawings and machine-mounts the 35 mm positives on Filmsort cards. When full-scale prints are needed, the right cards are automatically sorted out and stacked in a 24-in.-wide Haloid continuous printer. This automatic unit produces 24 x 36-in. ink-free prints on a continuous roll at 20 fpm. Low-cost, high-speed process makes it cheaper to throw prints away than store them.

## Pig Iron Export Rise?

Look for exports of pig iron to climb if the scrap market stays strong. When scrap prices fell recently, foreign users of pig iron dropped their buying price \$4 per ton. Now, with scrap prices moving up, blast furnace operators wonder if the market's strength will cause export buyers to again boost their offering price.

## Corrosion Still Headache

The battle against corrosion of metals is far from being won. Direct cost of corrosion to industry is estimated at \$5.5 billion annually. Corrosion-prevention measures applied to a single oil tanker amount to \$150,000 each year, point up the enormous job still to be done by researchers in this field.



Bulletin 145 gives you 16 fact-filled pages of photographs and data on standard and custom-designed worm gear speed reducers and wormgearing components for built-in drives.

## Yours for asking—New Bulletin 145 on Worm Gearing

**W**HENEVER you want a safe, space-saving, right-angle drive, you specify Cleveland. This famous worm-gear drive transmits power uniformly, smoothly, dependably, under even the most severe operating conditions, for a lifetime of trouble-free service. Clevalands actually improve with use. Thousands of units outlast their driven machines.

To know what Cleveland best meets any need—for speed reducer or worm-gear set—standard or special—write for new Bulletin 145. Just off press, it will bring your file up to date on this ever more popular drive. The Cleveland Worm & Gear Company, 3282 E. 80th St., Cleveland 4, O.

*Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers, Limited.*

**CLEVELAND**  
Worm Gear

*Speed Reducers*







**THE SNARK:** This mighty Northrop SM-62 is scheduled for operational duty with the Strategic Air Command.

■ SPECIAL REPORT

# Will Guided Missiles Blast Aircraft Industry's Plans?

## New Weapons Concept Means Big Changes

**Last week THE IRON AGE reported a top Air Force general's predictions of aircraft cutbacks within the next few years.**

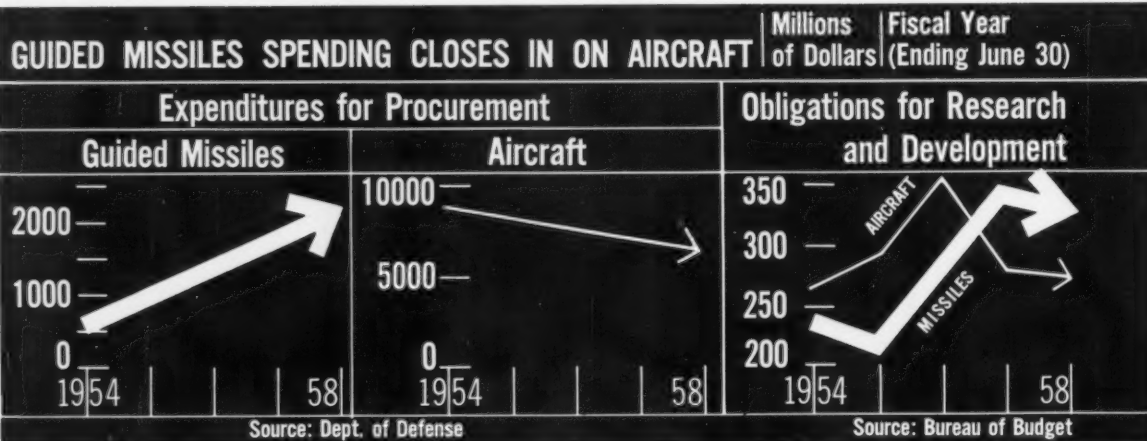
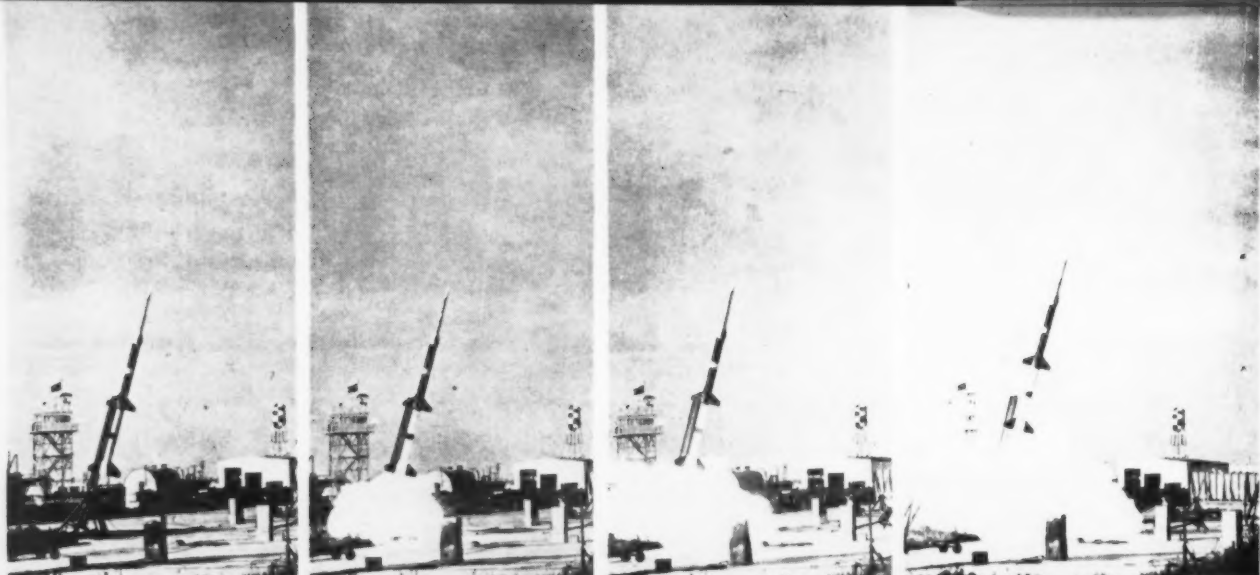
**Controversy now rages over missiles vs. aircraft and what it means to the aircraft industry and its millions of suppliers.**

■ On the West Coast, a major aircraft company executive shrugs his shoulders, implies it's just another Pentagon trial balloon.

In the East, another aircraft figure points out there will always be a need for manned aircraft, that missiles are only supplementary to the Air Force.

But in the Midwest, an aircraft parts supplier admits he is already going after the missile market, is diversifying almost out of the conventional aircraft field.

**The General Warns**—That's the multiple reaction of the aircraft industry and its suppliers to statements by Major Gen. David H.



Baker, director of procurement and production, Air Materiel Command. The General, who might be called the chief purchasing agent for the Air Force, warned in a recent, controversial speech:

New weapons concept will greatly reduce requirements for manned aircraft. The new emphasis on guided missiles will result in fewer plane contracts, fewer retooling jobs, fewer prime contractors, greatly reduced air frame requirements, and possibly new integrated missile facilities replacing aircraft plants.

**Some Doubters**—In some quarters, the General's comments were treated with skepticism and he was believed to be "flying above rated speed."

In others, particularly on the West Coast, where the dispersal

hassle still rankles, the feeling is that "We've been through all this before."

But the changeover of emphasis from manned aircraft to guided missiles is already well underway in a large part of the industry. Some suppliers are planning to replace dwindling aircraft business with missile business. Others are diversifying into different markets entirely.

**How Fast?**—The big giants of the industry, Boeing, Convair, Douglas, Lockheed, North American, Northrop, recognize the growing role of missiles and are preparing for it. At the same time, they are confident that missiles are unlikely to replace manned aircraft.

Plant dispersal, cutbacks, subcontractor gripes, Pentagon policy changes, are old hat to them. They

believe all these problems are loaded with economic and political dynamite, that drastic changes are not made overnight.

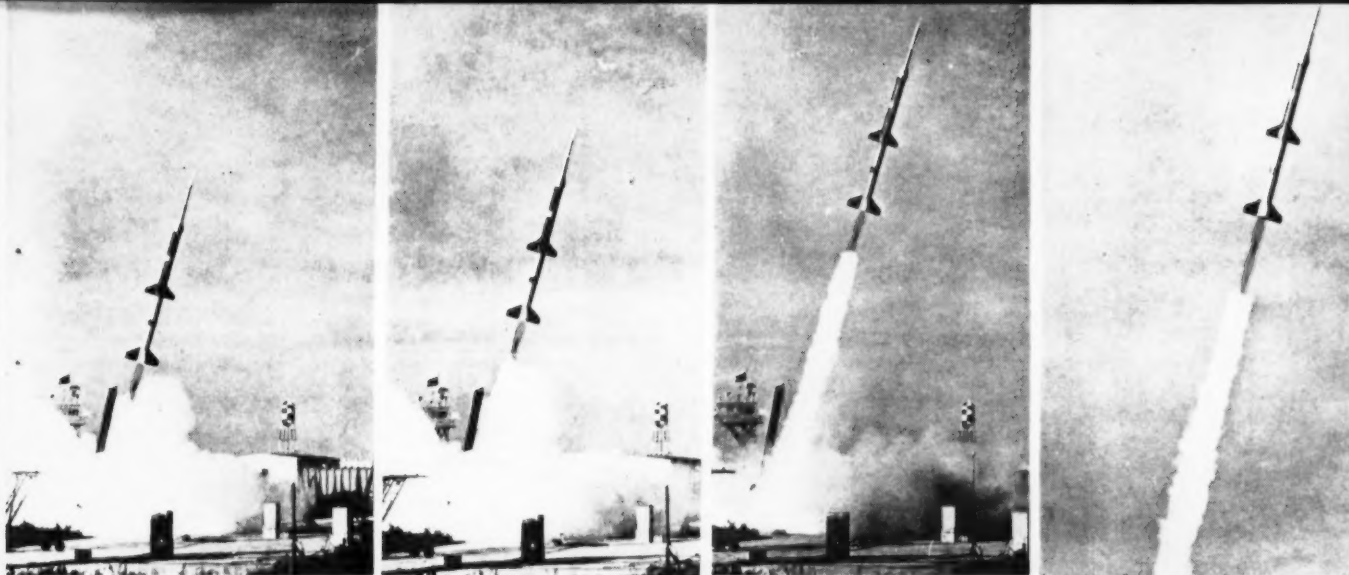
At the same time, guided missiles are 15 to 20 pct of the aircraft industry's backlog. The percentage will zoom.

**Production Grows**—Douglas has \$215 million in missile business, 20 pct of the firm's backlog. Lockheed did \$13 million in missile business the first quarter, up 40 pct from last year.

In spite of their bold front on behalf of aircraft, the big producers are setting aside more and more of their production space to missiles.

However, they contradict Gen. Baker's contention that the Air Force may decide it's cheaper to build new integrated facilities.

One aircraft leader contends they



**MACH 10:** That's the speed (6600 mph) attained by this 4-stage rocket fired by NACA scientists in Virginia.

are able to use present plants with minor changes in a few cases. "There's hardly a single piece of equipment in our plants that we can't use in missile making," he boasts.

But Gen. Baker contends that costs of re-equipping, re-tooling and transportation to test sites might make it more economical to construct entirely new plants.

**Suppliers Less Confident**—Suppliers of the industry are less confident. Many of them are actively planning for a dwindling business from manned aircraft.

Thompson Products, Cleveland supplier of aircraft and auto parts, last fall started construction of a \$10 million missile fuel and hardware research and development facility.

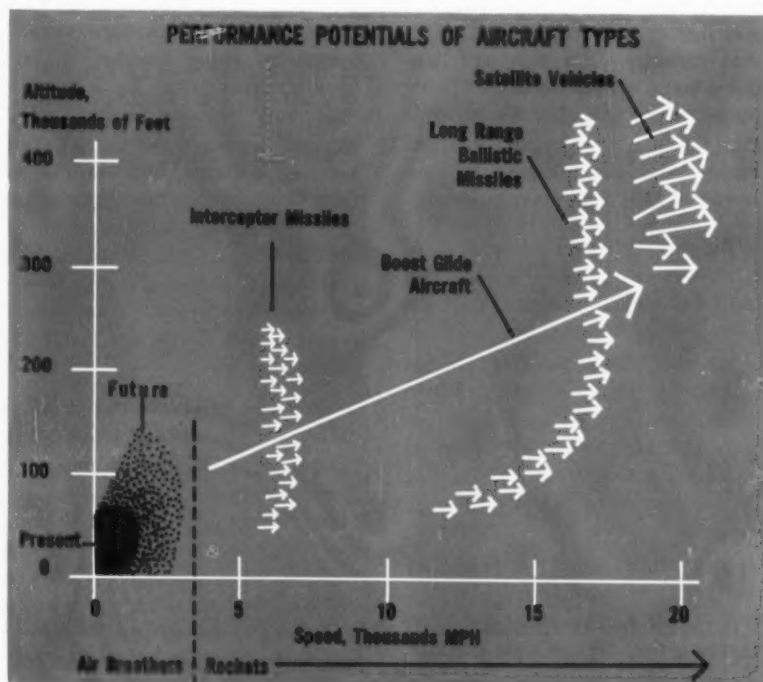
Its divisions or affiliates, Ramo-Wooldridge Corp., Los Angeles; Dage Television Div., Michigan City, Ind.; Bell Sound Systems, Columbus; Kolcast Industries, Inc.; Valve Div., Cleveland; and Thompson Products, Ltd., Canada; are all shifting into missile work.

**Looking for Business**—Most aircraft component suppliers have become familiar with Air Force cycles and are diversifying and hunting up new products. Given another year or two of strong procurement, and they should be ready for the worst.

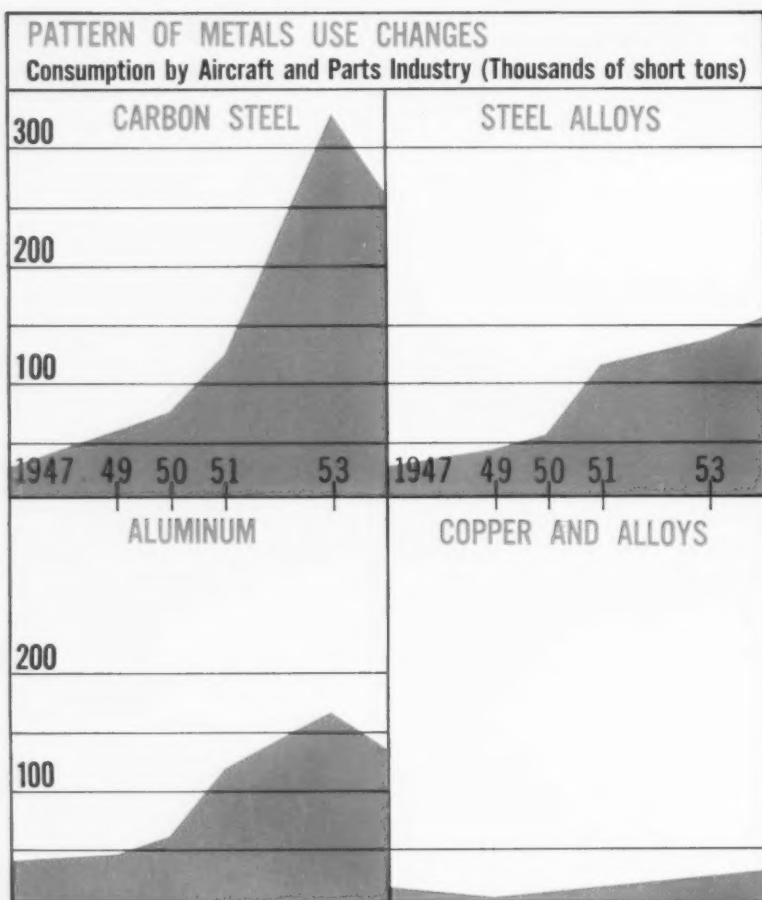
One big Chicago jet engine maker, sitting on a \$1 billion backlog, is nevertheless actively looking for new work. Another large engine maker is building missile power plants. In regard to planes, this manufacturer believes that most cut-backs will affect planes on the drawing boards. The company believes it will not be affected for models already developed. But it counts on growing with the missile program.

**Forgers Hurt**—Trend away from jet planes is already being felt by large aluminum forgers. The \$40 million Air Force heavy press installation at the Cleveland Works of ALCOA, for example, was designed for forging large section aircraft wing spars and other components. It is currently working at capacity, although a dropoff in inquiries has been noted. But a market may be found in missiles.

At heavy press plants, Air Force



Source: National Advisory Committee for Aeronautics



Source: Aviation Facts and Figures

gets first call on forging and extrusion capacity. But they are handling some civilian work. If Air Force orders dwindle, it's possible that civilian work for railroad wheels and underframe, for example, could keep them busy.

**Big for Electronics**—Makers of electronic equipment, for example, see their market growing with the swing to unmanned air weapons.

Another factor in the missile program is the underlying tension developing between makers of aircraft and electronics in regard to missiles. A battle may be shaping up for control of the huge missile spending.

Electronics manufacturers say it's their systems that make a missile what it is. Aircraft people say anything that flies is their domain.

**Merger Possibilities** — There's

talk of a rash of mergers (aircraft companies going together to buy up electronics firms) for a broader base and stronger position. But electronics people see capital costs keeping airframe builders out of their field.

Westinghouse recently spent \$6 million for a defense electronics plant near Baltimore, on top of another \$8 to \$9 million on a similar plant in 1952. Others have similar plans.

**Effect on Steel**—In the steel industry, makers of high temperature alloys are up in the air about the aircraft market. Orders of jet engine builders are lagging. At present, jet engines provide the big market for super alloys. About 5000 lb goes into a big engine. And scrap loss is two to one, or higher.

Effect of increased missile production is not known. Turbo-jets

would probably take large quantities of super alloys. Rocket types might take less.

**Pentagon Surprised** — Even in Washington, some of the Air Force brass were stunned by Gen. Baker's appraisal, apparently not because of any inaccuracy, but because of timing and bluntness.

And the question of fewer subcontractors may be the hottest single point of Gen. Baker's comments.

In the Navy, both the Bureau of Aeronautics and Bureau of Ordnance say they will maintain as broad a base of prime and subcontractors as the budget will allow. They will continue to encourage subcontractors.

**Subcontractor Picture** — Plane makers admit that missiles can substantially alter the subcontracting picture. But industry spokesmen stress these points:

Make or buy decisions are complex. Decisions depend on a wide variety of factors and generalizations are dangerous.

Complexity of missile designs will not be known until contracts come through.

Volume can change suddenly, alter the whole subcontractor picture.

There is still a big research and development job to be done. Manned aircraft have supporters at high levels.

There will still be many jobs for manned aircraft for a long time to come.

**Plane Makers View**—Here's the reaction of Rulon Nagely, director of material, North American Aviation Inc., a company deep in missile making:

"Certain prime contractors in this area will have more work to let out during the next two years, while other prime contractors will have less work to let out, depending on each company's individual program."

Forty to fifty pct of plane makers dollars now goes to outside sources. Boeing says it will subcontract 70 pct of Bomarc production.



**Dispersal Position** — Another controversial point is possible location of missile plants in remote areas or closer to test areas, for both strategic or economic reasons. The Air Force isn't aware, at present, of any firm policy on dispersal, however.

West Coast aircraft makers, having been through the dispersal fight before, discount this to a great

extent. They have instances to cite to prove the point.

Boeing's Bomarc production site bounded around the country, finally ended up at home at Seattle. Lockheed was forbidden to build its missile plant in Los Angeles, yet finally located its \$30 million facility south of San Francisco.

However, safety from attack isn't the whole story. Gen. Baker's

thought is that they would have to be located near test sites, that present aircraft facilities might not be suitable.

**Reprints** of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

## Big Business Probes Begin

**It's no feint. Five separate committees are ready to do battle in Congress.**

**Prices and profits in basic industries are due for a buffeting.**  
—By N. R. Regeimbal.

■ The much-heralded big-business investigations lined up by Congress this year were pushed into pigeon holes by the more sensational labor scandals and the budget wrangles—temporarily.

Now, eager congressmen are dusting off their files for a delayed start on what they hope will be a roasting attack on business concentration and price leadership by a few firms.

**Dig Into Tax Returns**—The Senate Judiciary Committee has re-

ceived White House permission to scan the income tax returns of the firms it studies in a planned investigation of antitrust and antimonopoly laws. The panel, headed by Sen. Kefauver, D., Tenn., is pegging its probing hopes on a document purporting to show "economic concentration of control" in industry. The U. S. Census Bureau collected the statistics for the study, but they are being interpreted by the committee.

Sen. Kefauver's investigation is aimed at what he calls "administered price" industries, which are described as industries in which the prices are set by a few large producers and remain fairly stable.

**On the List**—Steel, autos, and similar industries are due for a going-over by the Kefauver group.

The Joint (Senate-House) Eco-

nomics Committee is still doing preliminary work on its economic investigation of prices, wages, and profits in basic industries. Groundwork for this investigation has been laid over the past two years.

Another upcoming big-business probe will be conducted by a House Armed Services investigating subcommittee next month. Jet engine manufacturers will be asked to bare their corporate souls, as far as costs and profits on military contracts are concerned.

Meat packers, oil producers, food middle men and some bankers have already started their sessions before Congress.

**Where Little Firms Stand**—Rep. Wright Patman, D., Texas, whose

**Continued on Page 152**



**SEN. KEFAUVER:** Plans probe of "administered price" industries.



**REP. PATMAN:** Is the "little fellow" getting squeezed out of credit?



**REP. REEBURN:** Seeks proof that industry dominates U. S. agencies.

# Will Steel Sales Rally in 1957?

## That's the Consensus at AISI Meeting



**FRIENDLY COMPETITORS:** Three top steel men compare notes at annual meeting of American Iron and Steel Institute. From left, C. M. White, Republic; Roger Blough, U. S. Steel; Avery Adams, Pittsburgh Steel.

**Steelmen are relying on a late surge to bring this year's production up to 1956 levels.**

**Summer decline is not expected to cancel out expected steel price increases.—By J. B. Delaney.**

■ In New York last week the nation's steel leaders gathered for the 65th general meeting of the American Iron and Steel Institute. They noted briefly the first 100 years of the industry's growth and development (see centennial stamp), then went on to more immediate problems—present and future.

With only an occasional dissent, the steel executives agreed that business is perking up after some months of uncertainty. No one tried to overestimate the extent of the pickup, but the majority felt that the business climate is clearing up.

**Down, Then Up**—Even so, the general opinion was that ingot production would slip further during the summer months due to vacations and hot weather as much as custo-

mer disinterest. The comeback is expected to gain momentum during the fourth quarter.

Consensus of executives button-holed by reporters: Production this year will come close to or equal last year's 115 million ingot tons. Some said there is an outside chance that production will equal or exceed 1955's record 117 million tons.

**Price Talk**—As expected, there was considerable said about steel price increase expected to follow next July's steel wage boost. Wages will go up under the second phase of the steel firm's three-year contract with the United Steel Workers.

The comments on prices reflected the industry's concern over steadily rising material and labor costs. With one exception, no one was willing to concede that this year's decline in overall demand would have a bearing on the amount of the price boost. It was generally agreed that the need for higher prices was more basic than that.

**Blough on Wages** — Roger M. Blough, chairman of U. S. Steel Corp., declined to speculate on the probable amount of the coming

price boost. But he did say that after a closer look at the wage and fringe concessions that will become effective this year, he figures his company's employment costs will go up more than 20¢ an hour. Earlier he had estimated "about" 20¢.

On the basis of the rule-of-thumb used in the past, that is that prices rise 40¢ a ton for every penny increase in employment costs, an \$8 or more boost might be justified. But U. S. Steel, which usually sets the pace in price adjusting, has clung in the past to a conservative pricing policy. So the price boost, when it comes, might be around \$7 or less.

**Forum on Prices** — Charles M. White, chairman of Republic Steel Corp., believes the increase should be more than last year's \$8.50 a ton. David Carson, executive vice president of Sharon Steel Corp., plumped for \$10 a ton. R. L. Gray, president of Armco Steel Corp., feels that the slowdown in steel demand will tend to moderate the amount of the expected price increase.

J. L. Mauthe, chairman of Youngstown Sheet & Tube Co., disagreed with his fellow steel-makers on present market conditions. He said his company has not felt any upturn in business and he doesn't expect the situation to improve much for several months. He remains optimistic, though, for the year as a whole.

**Fairless Optimistic**—Confidence in the future of steel was the keynote of the address of Benjamin F. Fairless, AISI president. The steel industry, he said, has a "vast and vital responsibility—to continue capacity expansion." But he warned that the problems of paying for such growth are becoming increasingly critical.



In a prepared speech, Mr. Blough warned that proposed legislation which would impose a graduated income tax on corporations—suggested as an aid to small business—could fragmentize corporations and stunt the growth of the American economy.

**Threat to Business**—Describing such measures as a “major hazard to America’s future,” Mr. Blough declared that the growth and progress of American industry is threatened “by the widely-expounded doctrine that big business is a menacing evil which must be atomized in the national interest”.

Speaking on “breaking through the communications barrier”, Mr. White said:

“There is no basic conflict of interest between organized labor and management, business and the public, or business and government. There is only the conflict growing out of ignorance.”

**Technical Sessions**—Among the technical papers, J. M. Stapleton, assistant to vice-president in charge of iron products, U. S. Steel Corp., attracted wide attention with his discussion of “Development of Controlled Air Distribution for the Blast Furnace.” Mr. Stapleton reported on experiments in which air

proportioning systems were used to control the flow of air into blast furnaces through the tuyeres.

A review of titanium was presented by V. M. Whitmer, assistant chief metallurgist, Republic Steel Corp.

**Super Steels**—Citing the need for stronger steel tubular products for oil and gas wells in the near future, H. B. Emerick, director of technical services, Jones & Laughlin Steel Corp., outlined a process of continuous heating, water spray quenching and tempering as an effective method for producing such super-strength steel.

All techniques for plant efficiency and product quality are ultimately dependent on the inherent pride of the individual in his work, according to Walter T. Hayter, process control metallurgist, The Youngstown Sheet & Tube Co., in his paper, “Process and Quality Control for Management.”

**Institute Medal**—The American

Iron and Steel Institute Medal was awarded to A. F. Mohri, chief metallurgist, The Steel Company of Canada. Medal was awarded for Mr. Mohri’s paper, “Metallurgical Aspects in the Design and Operation of a New Continuous Annealing Line.”

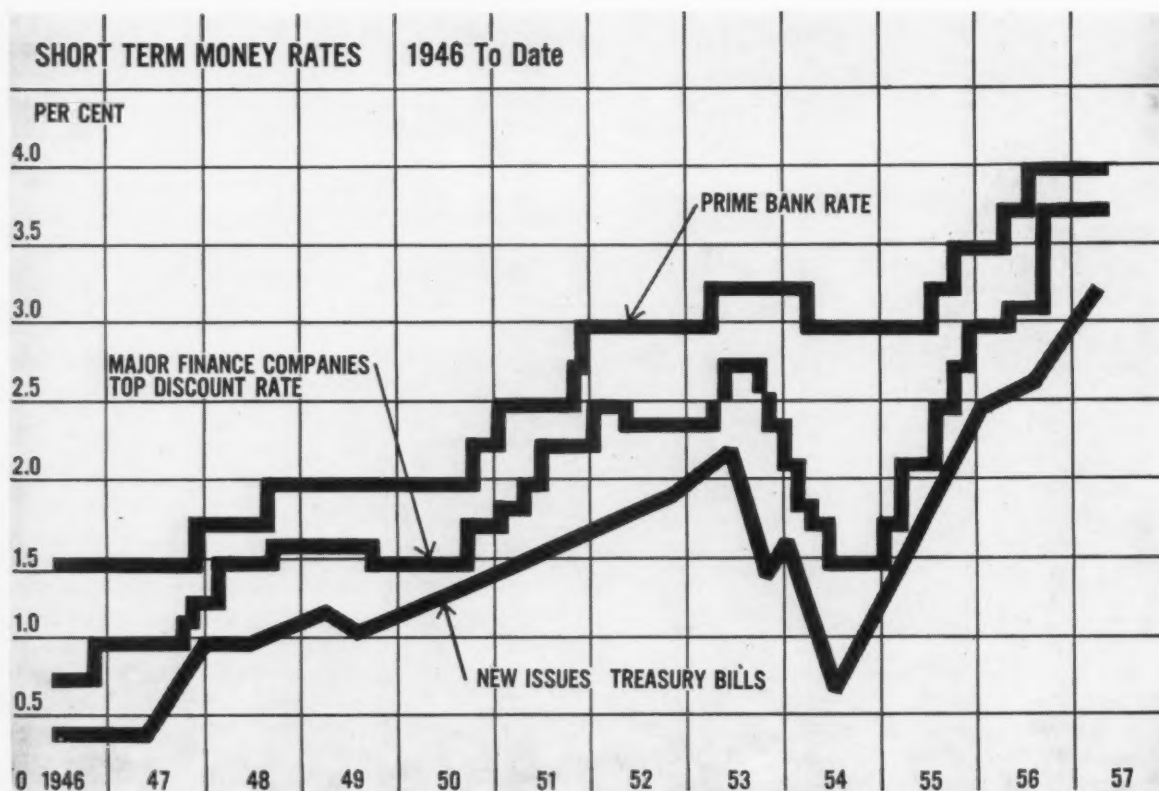
Charles M. Squarcy and Richard J. Wilson of Inland Steel Co. won the regional technical meeting award in the field of operations. They co-authored a paper, titled “More Iron Without More Furnaces.”

**Regional Awards**—M. W. Lightner and R. W. Vanderbeck of U. S. Steel received the regional award in research for their paper, “Factors Involved in Brittle Fracture”, presented in Pittsburgh last November.

The Institute’s board of directors announced the re-election of all present officers, including Benjamin F. Fairless, president; Max D. Howell, executive vice-president; and George S. Rose, secretary.



**ANNIVERSARY STAMP:** Album of Steel Commemoration stamps (see above) is presented Benjamin F. Fairless, left, president of AISI, by Postmaster General Arthur E. Summerfield at 65th meeting of AISI.



**CLIMBING:** Climbing interest rates make short-term investments more attractive to management.

## Make Your Money Earn Its Keep

**Money can earn money if you take time to figure how to keep it at work.**

**Changes in your cash handling procedures can pay dividends. Here's how Gulf Oil does it.**

■ John Shaw is a man who believes in making the almighty dollar earn its keep. And as assistant treasurer of Pittsburgh's big Gulf Oil Corp., he has quite a few dollars to push around.

Mr. Shaw outlined his views on money management in a talk before an American Management Assn. group in New York last week. What he had to say, in effect, was that it's the bounden duty of management to keep money working. And there are ways to do this.

**The Shoe Fits**—While the amount

of money shuttling in and out of Mr. Shaw's company is far and above the average (Gulf's average last year was \$24 million a day), the principle is the same.

Here are some of the ways Gulf has found to avoid what the speaker called "hidden losses" in money management:

**Unexpected Outlays:** When the boss asks that money be ready for future call on short notice, do you lay it aside and wait for the call, or do you keep it working? Gulf puts it to work by short-term investments. When the call comes, the investments are liquidated and the cash is available to management.

**Field Disbursement Accounts:** At one time, several of Gulf's divisional field offices requisitioned funds once or twice a week. An analysis disclosed that quite often

part of this money was lying around idle. Result: Gulf put the offices on a daily cash requisition basis. This meant, for example, that instead of transferring \$5 million each Monday, the amount transferred would be \$1 million each day. On the first day, \$4 million would be free; the next day, \$3 million, and so on.

"It adds up," said Mr. Shaw, "to the equivalent of \$10 million free for one day which at 3 pct interest has a value of \$833.33 each week, or more than \$42,000 a year."

**Build-up in Field Accounts:** Past practice had been to build up field accounts for specific payments over a period of 15 to 20 days. It was decided to have the excess funds transferred to a Pittsburgh control account and invested. When the payments are due, securities are converted to cash on the same day. "In one instance this particular



utilization of the funds had a value of \$4,000 a month.

**Daily Cash Position:** Each afternoon, over a private wire system, Gulf receives messages from its divisions that enable it to know within a narrow margin of error what its cash position will be the next day. If a net cash gain is indicated, Gulf arranges to invest the excess funds. If the opposite is true, securities are liquidated to bring the control account up to a predetermined level.

**Timing of Payments:** It often happened that division offices would mail checks to cover sizable invoices on a Friday and, on the same day, ask for funds from the Pittsburgh control account to cover. Since the checks were being mailed out-of-state and would not be presented for payment until the following Tuesday, Gulf changed the procedure. It instructed its divisions to mail the checks Friday but include the figure in their Monday's work and ask for funds accordingly. Result: The money remained invested, earned interest for three days longer than under the original arrangement.

Another suggestion: check on minimum balance required by a bank to handle an account. Often some bargaining can be done on this.

**Where To Invest**—Short-term investment possibilities outlined by the speaker include U. S. Treasury Bills, Federal Intermediate Credit Bank Debentures, Federal Home Loan Bank Notes, Federal Land Bank Bonds, Banks For Cooperatives Debentures, and Federal National Mortgage Assn. Notes. Also Finance Company paper, tax-exempt securities, short-term Railroad Equipment Trust Certificates or Conditional Sales Contracts, Commercial Paper, Corporate Bonds and Notes, and Bank Time Deposits.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., THE IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

# Design Engineering Proves Its Value

**New York show points out progress in product design and engineering.**

**Products sold in most fields of industry today didn't even exist as recently as 1950.**

■ American industry is plowing more of its gross sales dollar back into new product development than at any point in history. This was brought out in opening remarks by industrial leaders at the Design Engineering Show held last week in New York. It was underscored by record attendance and what exhibitors called exceptional interest at the four-day meeting.

Running concurrently at the spacious new Coliseum was the 1957 Design Engineering Conference sponsored by The American Society of Mechanical Engineers.

**Big New Field**—Representatives of the machine tool field told ASME members that 70 pct of equipment now being sold either didn't exist in 1950 or has been completely redesigned since then. A spokesman for the business machine industry placed the figure for his product at 85 pct, and an appliance maker declared household appliances stood near the 95 pct mark.

The trend is growing, they said, and points up the basic change that's taken place in the designer's function. Where he was once concerned mainly with styling, a big part of his job today is to cut manufacturing costs and at the same time improve quality of a product. Hence the need to keep up with new developments in materials, equipment and processes.

**All in Favor**—That the Design Engineering Show plays an important part in helping designers find

what's available was the appraisal of visitors and exhibitors alike. Some 20,000 engineers from 15 countries and all areas of industry toured the exposition. They saw more than 10,000 materials, devices and components displayed by 371 exhibitors.

Hands-down favorites were new basic materials—things like foaming plastics, sag-resistant polyethylene, special high-temperature alloys and various types of adhesives.

One of the outstanding new processes introduced at the show is a chemical surface treatment that provides a substitute for tinplate. Already being used by can manufacturers for detergent containers, it's now undergoing long-range tests with a variety of foods and non-foods. (For more on this watch THE IRON AGE on June 6.)



**DO-IT-YOURSELF:** Design Engineering show visitors were invited to try their hand at gaging screw threads at Standard Pressed Steel Co. booth.

# Aluminum Sales Stage Comeback

## Will They Keep Up with Growing Capacity?

**Despite spotty conditions in some of its important markets, producers are optimistic about sales in '57.**

**Buyer inventory adjustments are about ended. But expanding capacity will keep the pressure on marketing efforts.**

■ Aluminum men feel their market has just about completed the inventory adjustment now hitting steel and is definitely on the road back.

The trail up to now has been anything but smooth. Aluminum shipments began their dip last summer with a falloff first in June. There was a brief rally in July when buyers, scenting the coming aluminum

strike and higher prices, did some hedge buying.

**Fair Weather Coming?**—During the rest of '56 the trend was generally downward. And in '57 the industry's excess capacity showed up in overproduction. Now, for the first time in almost a year, aluminum producers are optimistic.

The market barometer shows March shipments are over February's by 11 pct. Another 5 pct gain in April is indicated by the preliminary sales figures of one large producer.

But no one is ringing any bells yet. Alcoa vice president E. B. Wilbur sees a sales improvement in the second quarter but doubts that this period will top the second quar-

ter of 1956. Field reports indicate conditions are still spotty in important aluminum markets.

**Inventory Rebound Due**—There is still uncertainty about the exact timing of the upswing but general confidence that it is coming. R. S. Reynolds, Jr., of Reynolds Metals sees "strong indications that the market for aluminum will strengthen substantially. . . ." He says inventories are relatively low and should pick up in the second half of the year.

This ready availability of aluminum accentuated inventory cut-backs. With lead times short, purchasing agents trimmed stocks several more notches. On top of this several important markets have been having disappointing years. Eight to ten pct of aluminum shipments go to automotive users, who are falling short of predicted goals and are operating with tight inventories.

The decline in housing construction has probably been the biggest blow to aluminum producers. Over 20 pct of all aluminum goes into building and construction. Aluminum extrusions for window and other home applications were particularly hard hit by the housing slump. In February the industry put through a 5-6 pct cut in prices of soft aluminum extruded shapes, with other products holding.

**Markets Chase Capacity** — Sales of foil, transmission cable and hard alloy extrusions have held up fairly well. Delivery of heavy forgings extends into the fourth quarter. The aircraft market is steady.

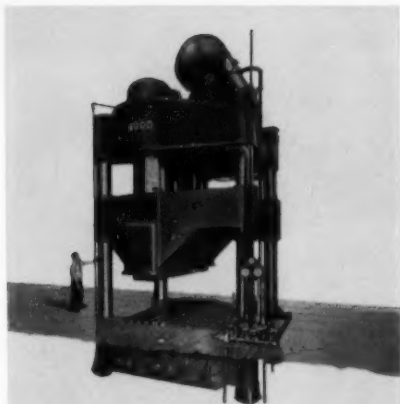
But aluminum producers can't stand still. New facilities are expected to bring domestic production capacity to 2.5 million tons this year; 3.00 million tons in 1958; and 3.4 million tons in 1959.

## Is Worst Over for Aluminum?

Shipments of Mill Products and Primary Shapes

(Millions of lb)

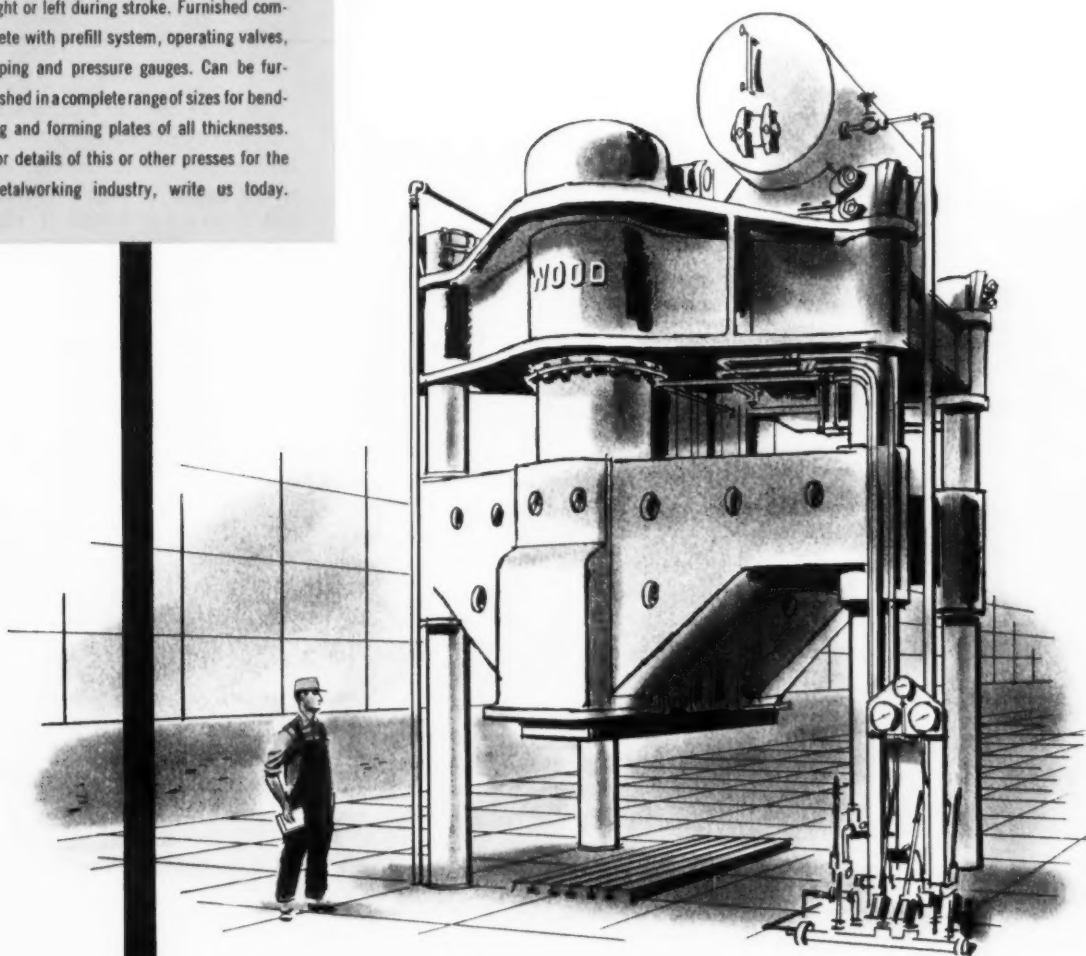




1500-ton Heavy-Duty Forming Press for bending and forming operations on heavy steel plate. Moving platen can be tilted right or left during stroke. Furnished complete with prefill system, operating valves, piping and pressure gauges. Can be furnished in a complete range of sizes for bending and forming plates of all thicknesses. For details of this or other presses for the metalworking industry, write us today.

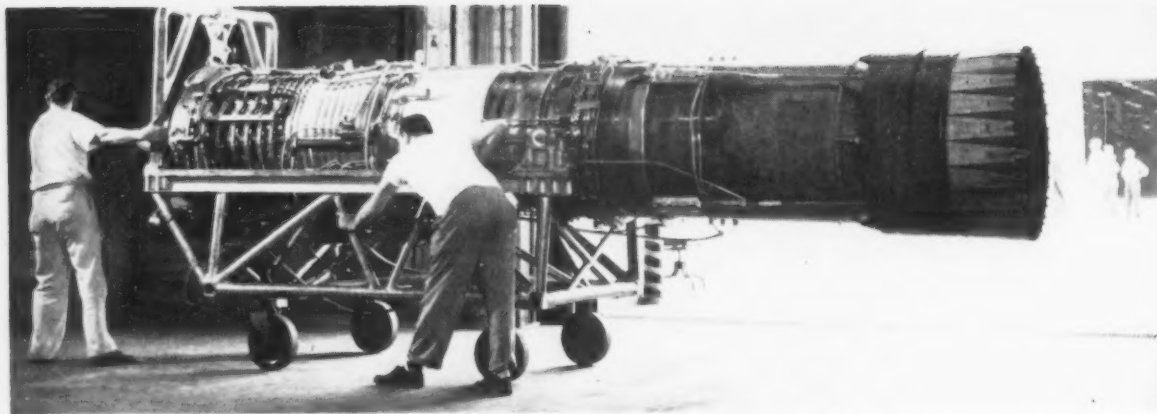
## *You'll like what it does to production*

It's just plain common sense—when your down-time decreases your production is bound to increase. Down-time can't be eliminated, but R. D. Wood Presses hold it to a minimum. The sound design, choice materials and careful craftsmanship that go into a Wood Press produce a superior product—a dependable, smooth-working press that can't help but increase production records. Write for our catalog and engineering information—no obligation.



**R. D. WOOD COMPANY**

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**POWER-PACKED:** General Electric's new J79 aircraft jet engine is capable of powering aircraft twice the speed of sound. In the 10,000-lb thrust class, GE

claims the engine has more thrust-per-pound of engine weight than any other engine its size. It is being produced at the company's Evendale, O., plant.

## Republic Steel Sees Decade of Growth

**Analysis of company-sponsored poll portends continued industrial expansion.**

**Gains in steering technology and warehouse operations expected to be most marked.**

■ In a well-timed gesture, Republic Steel last week painted a promising picture of the steel industry's future. It is in sharp contrast with some of the current gloom over the slowly declining rate of operations. All the charts go up except number of farms.

Republic polled over 200 experts to gage the potential of U. S. industry for the next decade and beyond and wrapped it up in a new, widely-circulated 38 page illustrated book, "U. S. A. Tomorrow."

**Measures Potential**—"This is no operation crystal ball," says C. M. White, Republic chairman. "We've taken the best opinions we can get, reduced them to a common denominator, and divided them by a factor

of caution. The result is neither a prediction nor a goal, but a yardstick to measure the potential of this country in the years immediately ahead."

For the steel industry itself Republic anticipates changes in technology may be more significant than capacity which is set at 160 million tons by 1967. Items mentioned include direct ore reduction, higher pressure blast furnaces, oxygen Bessemer furnaces and vacuum melting. "Continuous casting is a strong possibility and so is tape control for blooming mills," according to the book.

**Markets Will Change**—Republic also sees an increase in warehouse operations. Increase in tonnage handled was set at a total of 22 million tons annually by 1967 compared to 17 million last year. And slitting, shearing and even light rolling facilities have broadened the industry's usefulness.

Throughout the report, startling technological gains are predicted in

addition to the more or less standard industry market projections. For automobiles the gas turbine or free piston engine is seen in some cars and trucks by 1965. If the gas turbine wins, there is likely to be a shift toward greater use of high alloy, heat resisting steels, it predicts.

"There will be an increase in the use of plastics and lightweight metals, but steel will remain the bargain among metals and the key material," according to the report. "Its strength and resistance to impact will more than offset its greater weight."

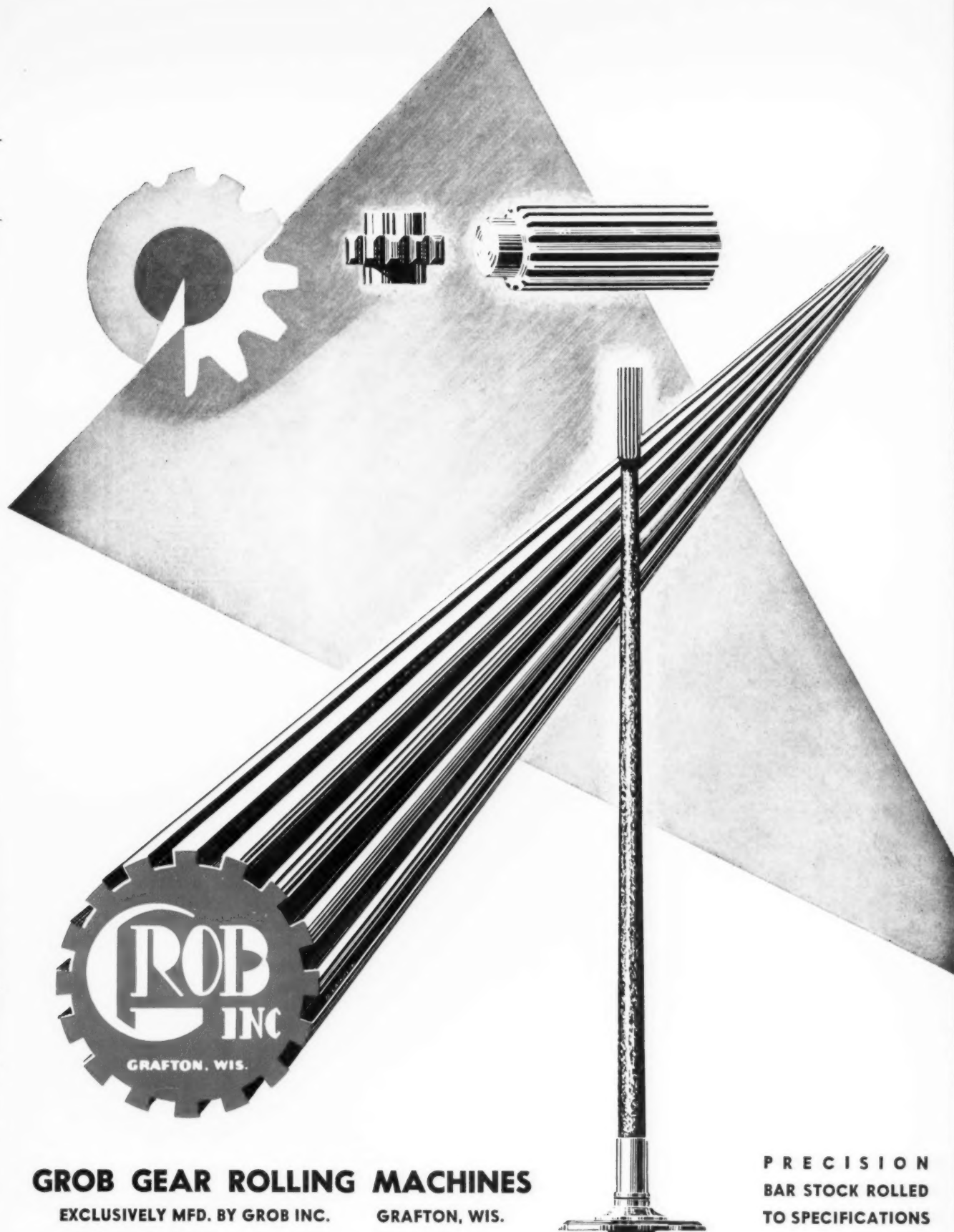
### Mineral Program Fight

Economy-minded House members and politically minded senators are again at odds over whether to continue the government's stockpile purchase of four "strategic" minerals.

The House has consistently refused to approve a \$30 million request for funds to continue stockpile purchases of tungsten, fluor spar, asbestos, and columbium-tantalum through the end of this fiscal year. The buying program stopped last winter when funds ran out.

Senators are hoping for at least a token appropriation. But in other conferences, the House flatly refused any funds.





## GROB GEAR ROLLING MACHINES

EXCLUSIVELY MFD. BY GROB INC.

GRAFTON, WIS.

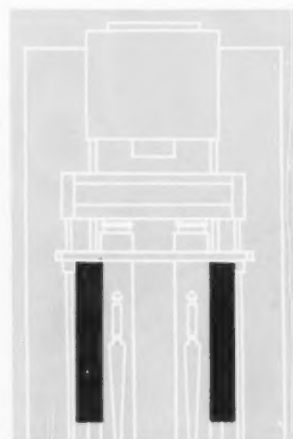
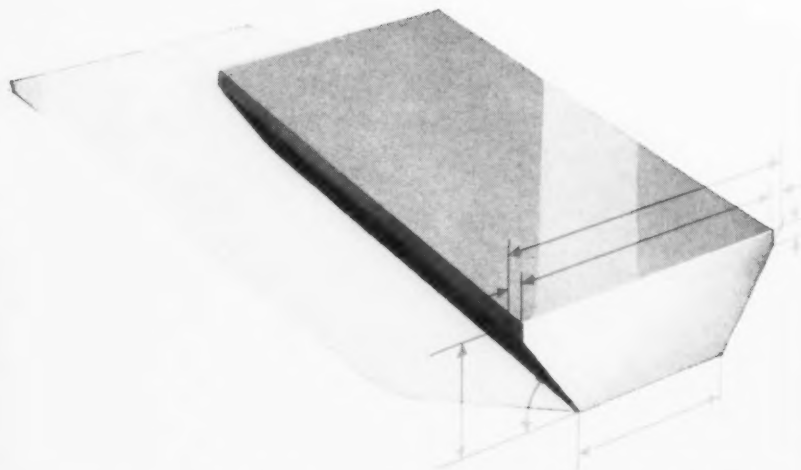
PRECISION  
BAR STOCK ROLLED  
TO SPECIFICATIONS

THE IRON AGE, May 30, 1957

J&L hot extruded cold drawn cam rail section

# **cuts machining cost**

from \$1.75 to 75¢ per foot



"This part was previously milled from a cold rolled section at a cost of approximately \$1.75 per running foot. Our present cost is 75¢ per foot using your cold drawn extruded section."

This machine tool manufacturer cut his production costs by buying these exclusive J&L steel sections. You can obtain similar savings:

1. Eliminate machining and finishing operations.
2. Reduce scrap losses almost to zero.
3. Eliminate cost of casting and forging intricate sections.
4. Reduce inventories because extrusions are quickly available.

Investigate this new production technique for your shape profiles—within present limits of a design which can be inscribed in a three-inch circle. You'll surely boost production, cut overall cost. For complete details write to the Jones & Laughlin Steel Corporation, Dept. 403, 3 Gateway Center, Pittsburgh 30, Pa.



**Jones & Laughlin**  
... a great name in steel

Howard Maynard

# Making a Name in Machine Tools

Special attention to details is one of several reasons why Mr. Maynard and his company are earning a tooling reputation.

The right way to build automated machinery goes beyond mechanics, he suggests.

An end product reflects every phase of a company, particularly the men who make it.

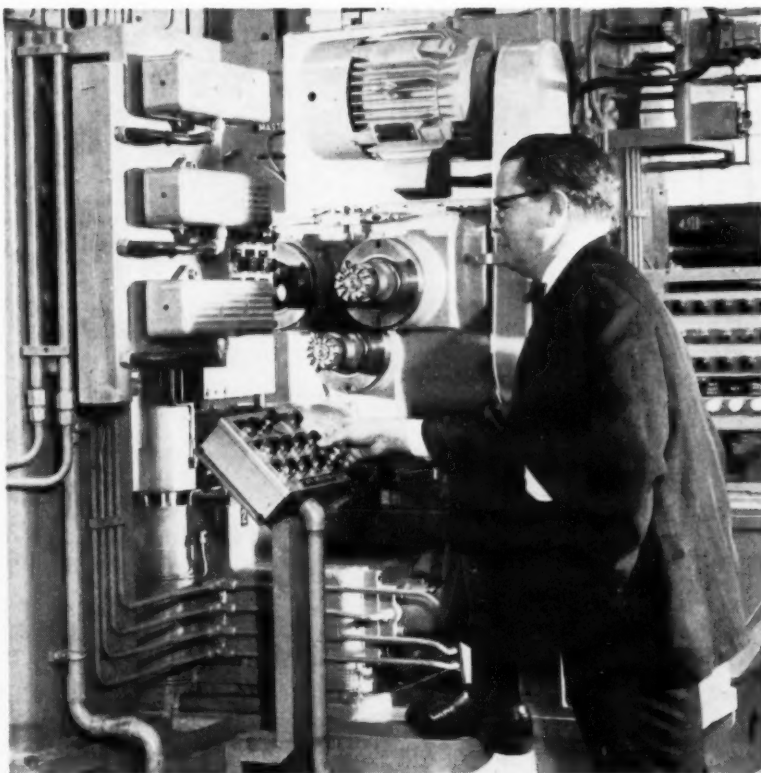
■ When Howard Maynard takes his daily trek from the president's office to the shop at Snyder Tool and Engineering Co. in Detroit, he accomplishes two things. He gets first hand knowledge of production and he gets to know his employees better. Both he regards as all-important in running a successful business.

Regardless of the frills and fancy phrases applied to many modern business organizations, when a company is stripped down to its bare essentials two elements stand out: the product and the men who produce it.

**Knows His Product**—Mr. Maynard isn't a man to lose sight of these essentials. To him, good employee relations mean good business. A high degree of worker morale pays off in less absenteeism, increased job efficiency, and a better end product.

While hob-nobbing with production men in his plant, Mr. Maynard gains more than a casual acquaintance with every machine tool his company delivers. He has a phenomenal memory regarding the machines Snyder Tool has built.

**The Details Count**—In the special machine tool business, Mr. Maynard says, you have to figure



Howard Maynard: Good employee relations means good business.

the extra details that make a piece of equipment right for a customer. It's the right way to build automated machinery. And it's a sure way of earning a good reputation in the field.

**His Start**—Howard Maynard began putting his mechanical aptitude to work on the assembly line at Chrysler Corp. after graduating from Albion College in 1932. At Chrysler, he worked up to the planning and sales departments. When he joined Snyder Tool in 1935, he was a one-man accounting, timekeeping, payroll, and purchasing department. By 1941 he had become treasurer. He was named president in 1947.

Once at the helm, his varied experience was put to good use.

**Delegates Authority**—He diversified his company's interests in 1949, when Snyder acquired the Arthur Colton Co., a pharmaceutical, chemical and packaging machinery builder.

While Mr. Maynard gives special attention to the shop, he also keeps in close touch with sales and engineering. He concentrates on policy matters. Letting employees stand on their own feet and carry out their responsibilities, pays off, he says. Snyder Tool's reputation attests to its success. So does the company's sales record.

## how to rustproof cold rolled steel in shipment and storage



Proved by actual test! Unwrapped steel rusted within a few hours. Identical steel wrapped in Ferro-Pak showed no signs of rust . . . even after several months. Non-toxic chemical vapors from Ferro-Pak coat the steel with an invisible film that makes it impossible for rust to get the slightest foothold.

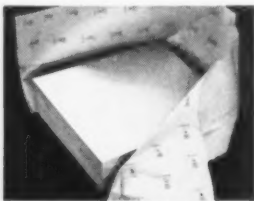
Even under adverse conditions, such as outside storing or shipping, Ferro-Pak provides complete protection. It is waterproof, strong,

yet highly flexible and easy to handle. The chemical rust inhibitor is compatible with oil and stays effective for long periods even when the humidity soars.

Whether you're a shipper or a buyer of steel, it will pay you to specify Ferro-Pak wrapping wherever rust is a problem. For an interesting idea brochure on many uses for Ferro-Pak, write Cromwell Paper Company, 4803 South Whipple Street, Chicago 32, Illinois.



**How to rustproof a freight car**—Ferro-Pak is used to line sides of car and to interleave coils, transforming ordinary freight car into huge rustproof package.



**How to rustproof black plate**—On this light gauge, dry, uncoated steel, rust can start from a fingerprint. Ferro-Pak keeps black plate rust-free even when the humidity soars!

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## by Cromwell

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"Paper Engineers" for Steel



# What "Moving Sideways" Means

**Absence of business trends appears to have the experts confused.**

**Failure of a cycle to develop leads to forecasting doubletalk. You have to look beyond the obvious.**

■ Every now and then a term creeps into the economic jargon; becomes the accepted, and over-worked, description of economic conditions.

Last year everyone was worried about business being "on a plateau." Today the economy is "moving sideways."

Don't be confused by the double talk. It's just that the plateau, extended past the time of the expected drop. A new term had to be brought into use to show that business advances and economic growth are not proceeding as rapidly as before. It also means the economic analysts don't know what the next trend will be.

**New Factors Appear**—It's possible that there won't be any pronounced trend. The economy continues to show resilient qualities that have forestalled predicted declines. As a result, although some segments of business have faltered, others continue to keep business at a high level.

That's why the Federal Reserve Board's summary of business conditions can report: "Economic activity generally remained at advanced levels in April and early May. Industrial production declined slightly, and construction activity, employment, incomes, retail sales, and wholesale prices continued to change little, at or close to record levels."

**What's Next** — The problem of moving sideways is the implication that a movement to the rear will start. In this regard, attention is now focused on spending plans of business itself.

You will recall that until 1956, business booms were generally associated with a surge of consumer buying. This tended to become synonymous with automobile buying, a fallacy now exploded.

## ... Next Worry: Capital Goods

**Peak Coming**—Although it depends on what survey you read, it is likely that capital expenditures by business may reach their peak late this year. The level for the entire year will be above record '56, but any slowing down is apt to generate some feeling of alarm.

This is logical, because the recent, and continuing, boom has been referred to as a capital goods boom.

**No Sharp Decline**—But there is no indication that the long term expenditures for new plants and equipment are going to taper off to an extent that will require a substitute factor in the economy.

It's noted that much of the capital spending has shifted from

expansion of facilities to increase physical output to replacement and modernization of existing facilities, with no sharp decline in prospect.

**Research Shows Way**—Another factor is the tremendous amount of money projected these days for research on new products. That's the fallacy of trying to look ahead in cycles. New demands for consumers goods are constantly created, as are new demands for capital goods to make them.

And this doesn't even touch on defense spending. The tremendous new outlays for guided missiles, for example, may be the next big single factor in the economy. (See Special Report, p. 51.)

## Tax Cut Momentum Grows

**Fever Is Catching**—Don't let the budget slashing fever in Congress become associated in your mind with an automatic tax cut. The complexities of the Federal budget are such that cuts in appropriations in this current session will scarcely be effective in the next fiscal year.

But some added hope for tax cuts comes from Congressional budget estimates that place revenues about a billion dollars over the President's original prediction. But then the same committee estimates that spending will also be higher.

**High Costs Hurt** — There is no doubt but that increased costs, particularly in Defense Dept. spending, are discouraging to the hopes of a tax cut. Any surplus will now be much lower than originally thought, despite increasing revenues.

Sentiment of the public, literally demanding some tax relief, has spread to Capitol Hill.

Regardless of group, there is increasing resentment against a level of spending, and taxes, that tends to eat up whatever economic gains are achieved.

# Foreign Car Sales Gain in U.S.

## Imports Are Growing Too Fast to Ignore

**Detroit is keeping a wary eye on small car imports. They have doubled two years running.**

**Industry executives say penetration—about 91,000 cars—is still too small to worry about.**

**Yet most U. S. automakers plan to cash in on economy car popularity.—By T. L. Carry.**

▪ The market for foreign cars in this country has increased by leaps and bounds in recent years. Indications are that it is still growing and will continue to increase for some time to come.

Statistics for the past 3 years show the extent of growth of the market. In 1954, only 25,385 foreign cars were sold in the U. S. Market penetration was a mere .46 pct. The figure doubled in 1955 when 51,658 vehicles were registered with a total penetration of .71 pct. Last year the number of registrations almost doubled again when 91,042 cars were sold and market penetration was 1.53 pct.

**Higher In 1957**—So far this year, it appears that foreign autos are on their way to another record. What has caused the sudden demand for foreign cars?

It was only a few years ago when the tiny vehicles were considered a novelty. Any acceptance that they enjoyed was attributed to snob appeal. In some circles they were considered rich men's toys. Still, MGs and Jaguars (see photo) continued in popularity. Introduction of the German Volkswagen in this country added to the growing demand.

**The Buying Motives**—Many theories have been expressed regarding the increasing popularity. Most industry executives are convinced that it is a combination of three factors which has created the demand.

First, it is considered smart to own a foreign car. Secondly, small cars fill the need for a second car and, thirdly, there is no denying the fact that they are economical. The economy factor seems to be the most important.

**Can U. S. Compete?**—Except for the more expensive sports jobs, most foreign cars will deliver well over 20 miles per gal. It's hard for any American producer to match that figure. That's the main reason the industry is keeping such a close watch on the foreign car trend.

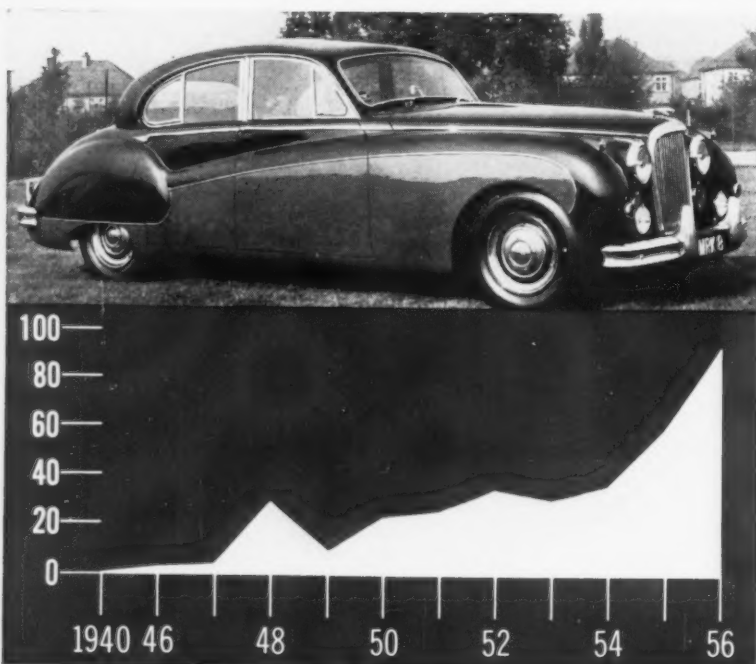
The question naturally arises, will domestic producers ever decide to make a small car? As of right now, it is highly doubtful. Biggest drawback is the cost of labor.

Small American cars couldn't be marketed for the same price as a foreign car in this country because it would cost almost as much to make a small car as it would to produce a standard size unit.

**Market Too Small**—At the same

## More Foreign Cars On U. S. Streets

(Imports of motor vehicles, in thousands)



about PLASTISOL COATINGS

from: *Metal & Thermit*  
to: *The IDEA Minded*

#### How to make ordinary metals last longer

These large metal rings, being sprayed with a sheet-like coating of Unichrome Plastisol, will have extraordinary protection not only against corrosion but also abrasion. Past reports show that life of equipment subject to abrasion has been increased as much as twelve times with plastisol protection.

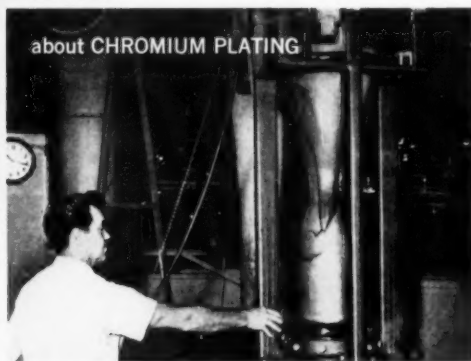
Unichrome Plastisols produce heavy-duty, thick, impact-absorbing, chemical resistant coatings. They make ordinary metals fit for severe service conditions. Suggested applications: As a "cushioning" coating for conveyors; also tank linings which cost less and prove better than sheet materials.



about WELDING

#### Well welded . . . world's largest coal trailer

Built by Marion Metal Products Co. to carry 95 cubic yards of coal, the largest bottom-dump hopper trailer weighs more than 119 tons. This specially engineered trailer was welded with Metal & Thermit "Murex" electrodes. These electrodes again demonstrated that they develop welds with good impact qualities, handle easily, deposit fast at high currents for economy in fabrication.



about CHROMIUM PLATING

#### High speed plating for high speed engines

One producer plates combustion chambers of rocket engines with chromium to gain its high melting point and corrosion resistance. The Unichrome SRHS® Chromium Plating Bath which was installed reduced plating time by 6 hours per engine. Furthermore, the leveling action of the bath smooths out the small imperfections in the surface being plated, producing a finer finish. Note: The SRHS Bath is also self regulating, giving more foolproof operation.

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TIN & TIN CHEMICALS  
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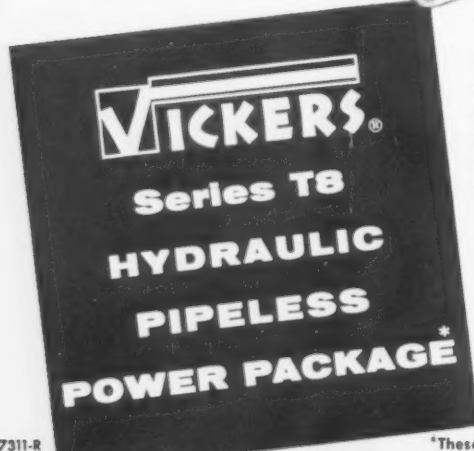
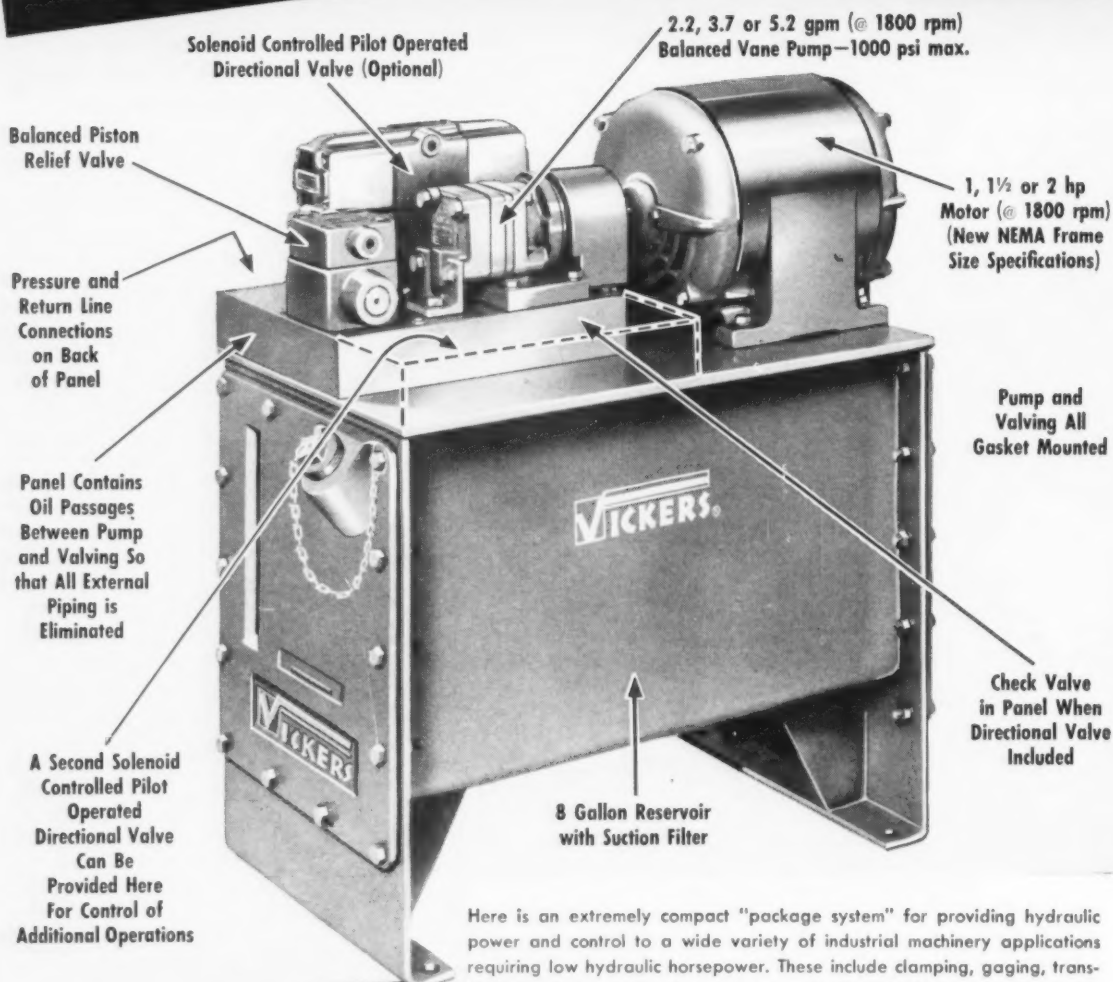
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# BETTER DESIGN... In hydraulic power and control systems



Here is an extremely compact "package system" for providing hydraulic power and control to a wide variety of industrial machinery applications requiring low hydraulic horsepower. These include clamping, gaging, transferring, rollover, elevating, indexing, chuck and clutch operations, etc.

Note the many features indicated on the photograph above. The result is improved and simplified hydraulic design... also reduced installation and maintenance costs. This "package system" has great flexibility... is available in a wide variety of combinations of standard components assembled to suit individual requirements. Pretested and ready for immediate operation, it has also the advantage of undivided Vickers responsibility. For further information, ask for installation drawings 178706-8.

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\*These "package systems" supplement the Vickers line of standard hydraulic power units.

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



## Automotive Production

WEEK ENDING	CARS	TRUCKS
May 25, 1957	125,473	23,754
May 18, 1957	127,390	23,138
May 26, 1956	108,126	21,678
May 19, 1956	105,763	20,902
TO DATE 1957	2,788,073	465,254
TO DATE 1956	2,701,226	494,878

\*Estimated. Source: Ward's Reports

time, total market penetration is still small and industry executives feel that there is no need to produce a small unit when big cars still have such a wide acceptance here.

Nevertheless, the market is growing. Both American Motors Corp. and Studebaker-Packard Corp. are trying to get a share of it. AMC has its Rambler and Studebaker-Packard will soon introduce an economy version of its Studebaker.

As for the Big Three, watch for both General Motors and Ford to concentrate on importing more of their foreign products.

## Chrysler-UAW Truce

Chrysler Corp. and the UAW have buried the hatchet for the time being. The latest flareup in a series of labor troubles which have plagued Chrysler involved the moving of machinery to the company's new stamping plant in Twinsburg, O.

Local Union 212 refused to move the equipment out of the plant, because it claimed that the company had refused to settle certain grievances which had been pending for some time.

**Union Gives In**—The company claimed that the local was violating its contract because it had already reached an agreement regarding job transfer rights to the Twinsburg plant.

When the union refused to budge, Chrysler started proceedings to sue the UAW and the union, in turn, voted for a strike which would have crippled the whole corporation.

As a last resort, UAW president Walter Reuther and L. L. Colbert,

Chrysler president, tried to iron out the problem at a 6-hour meeting. The result was that the local union decided to move the equipment and Chrysler agreed to drop its suit, for an uneasy truce.

**Will It Last?**—So far, the agreement has worked. Chrysler's production has returned to normal. The big question in Detroit is how long the armistice will last. It could go on indefinitely.

## New Car Sales Improve Over Last Year

What has happened to automobile sales so far this year? It is difficult to generalize on the subject because some companies are doing much better than others.

In short, as far as the Big Three are concerned, Ford and Chrysler are doing much better than General Motors. Best estimate on new car stocks right now is close to 800,000 units. This figures out to about a 35 to 40 day supply for each dealer.

**GM Has Surplus**—However, it is not as bad as it sounds. The figure is still 100,000 units less than it

was a year ago at this time and the industry generally is not too alarmed about it. Here's why.

The majority of new cars in stock are General Motors products. GM makes more cars than anyone else and at the same time its sales have been slower than its main competitors this year.

**Stock Decline Coming**—But the industry does not think that this is a bad situation. It is pointed out that GM dealers are in a better position to work off inventories than any others in the business because of the large clientele that has been built up over the past years. It means a big selling job.

## Army Picks Chrysler

Chrysler Corp. is the Army's choice to build 900 of the latest type medium tanks. A firm production contract is expected.

Chrysler is the only current producer which offered a bid in response to an Army invitation in March. The bid, revealed as \$121 million in testimony before Congress, is considered reasonable by the Army.

By J. R. Williams

## THE BULL OF THE WOODS



**Facts to consider when you're buying**

# **Chromate Conversion Coatings**

## **for Corrosion Protection, Paint Base, Decorative Finishing**

### **WHAT IS IRIDITE®**

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a nonporous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

If your company is manufacturing or buying parts or complete assemblies made from or plated with any of the more common non-ferrous metals—zinc, cadmium, aluminum, magnesium, silver, copper, brass or bronze—you've probably already run up against the question of finishing these surfaces with a chromate conversion coating. These coatings are used to protect against corrosion, or to provide a base for paint or to provide a decorative finish for sales appeal or shelf life. Since chromate conversion coatings represent a relatively new means of obtaining these finishes, this digest of facts to consider may be of value to you.

#### **1. THE COATINGS THEMSELVES.**

There are many brands on the market. All are similar in many ways. Each, of course, offers its own specific advantages and these may relate to operating techniques, performance under actual use conditions, cost, availability, etc. Naturally, you'll want to choose a coating that is widely known and accepted under both military and civilian specifications.

#### **2. THE COMPANY BEHIND THE PRODUCT.**

Is it a reliable, established organization? Does it offer experienced technical service, both from the field-engineering organization as well as the home office and laboratories? The man who sells and services your installation should be thoroughly familiar with not only chromate conversion coatings and their applications, but also with the characteristics and performance of related finishing operations such as pre-cleaning, electroplating, painting, etc. This is most important since all steps of the finishing cycle must be functioning properly for the satisfactory performance of the ultimate finish produced.

#### **3. AVAILABILITY OF THE PRODUCT.**

Ideally, of course, the material should

be readily available to you from nearby warehouses to avoid time loss in long distance shipping and to provide emergency service, should the need arise.

**4. COST.** Naturally, the initial price of the material is important to you. However, just as you consider ultimate cost when you are buying mechanical equipment, ultimate cost must be considered for these finishing chemicals. So, it will pay you to investigate consumption costs, labor costs and the other factors which go into the determination of ultimate cost. Further, cost alone gives no indication of product performance, so careful attention must be given to the purpose the finish must serve and the value that finish will add to your product.

**5. FACILITIES FOR RESEARCH AND DEVELOPMENT.** Perhaps the existing types of chromate conversion coatings do not include a compound that will accomplish exactly what you wish. Then, it is important to deal with a supplier who has adequate research and development facilities available to work with you to produce a material to meet your needs. Naturally, such a project is seldom completed overnight. But, with complete cooperation and confidence from both you and your supplier, chances are a satisfactory program can be completed.

These are the concepts of sales and service on which we, Allied Research

Products, Incorporated, have developed and marketed the line of Iridite chromate conversion coatings...superior product performance, complete sales and technical service, easy product availability, economical cost, extensive research and development facilities. No doubt you are familiar with our line and have seen this trademark—

## **IRIDITE®**

—in our advertising, technical literature or on shipping containers in your plant. Remember this trademark when you're buying or investigating chromate conversion coatings for your company. It's your assurance of quality, economical products from a reliable and established company, skilled sales and technical service from both our home office and a national network of representatives, immediate availability from warehouses in strategic industrial areas and our willingness to work with you to develop new finishes to meet your needs, should the present line fall short.

For complete information on Iridite chromate conversion coatings, write today for your free copy of our technical data file. Or, for immediate advice, call in your Allied Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

### **ALLIED RESEARCH PRODUCTS**

INCORPORATED

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Manufacturers of Iridite chromate conversion coatings for corrosion resistance, paint systems, final finishing of non-ferrous metals; ARP Plating Brightener & Chemicals. West Coast Licensee—L. H. Butcher Co.

# Negotiated Contracts Under Fire

## Not Enough Bidding, Congress Warns

**Authority to negotiate military procurement contracts carries over from the Korean War.**

**Congress wonders if the more than 90 pct negotiated contracts should be cut.—By G. H. Baker.**

■ It's time to steer the military toward increased use of advertised bids in buying, a House subcommittee decides.

The Armed Services investigations subcommittee is alarmed at the amount of military procurement based on negotiations. Testimony before the group indicates more than 90 pct of non-public works contracts are negotiated.

**Recommendations**—In a report expected before the end of May, the group intends to tighten up the requirements for advertised bidding. Recommendations are to be along these lines:

1. Congress should end the authority, carried over from Korean War days, whereby the armed forces can negotiate many contract arrangements as a matter of expediency.

2. The lawgivers should closely restrict other exceptions to the rules on advertising for bids.

**The Figures**—In fiscal 1956, the military admits, the value of its contracts placed following advertised bids was \$2.9 billion. During the same year, which ended last June 30, contracts based on negotiations came to \$16.2 billion.

For the January-September period last year, Air Force negotiated contracts amounted to \$6.7 billion, or about 95 pct of the total placed. Navy negotiated contracts were valued at \$3.7 billion, which equals

90.9 pct of its total. The Army gives the dollar amount of its negotiated contracts as \$2.2 billion, or 82.2 pct of the full amount involved.

### Permanent SBA

The Small Business Administration is well on its way to becoming a permanent federal agency. President Eisenhower and the Congress are agreed that there's continuing need for the lending and advisory services that SBA provides for the nation's small firms. Only question at issue now is how large the SBA should be allowed to grow, and how liberal it may be in the terms of its loans.

Chief point now at issue is

whether the top limit on interest to be paid by SBA borrowers should be 5 pct, 6 pct, or the prevailing rate where the loan is arranged.

A 5 pct rate undoubtedly would siphon much loan business away from banks and other non-government lending organizations.

### Weeks' Successor

It looks like T. V. Houser, chairman of the board of Sears, Roebuck will succeed Sinclair Weeks as Secretary of Commerce in President Eisenhower's cabinet.

The appointment probably will be announced before Labor Day. Mr. Houser has been serving on the U. S. Commerce Department's Business Advisory Council.

## Budget Cuts Threaten BDSA Services

**Fight Not Over**—Money to operate the U. S. Commerce Department's aid-to-industry offices is finally in sight. But the battle over funds isn't over yet. The Business and Defense Services Administration, which operates most of the aid-to-industry offices in the Commerce Department, will be lucky to escape the budget-cutters with only a few scratches.

(Other agencies, such as the U. S. Information Service, will start the new fiscal year with some of their ambitious expansion plans abolished and others sharply cut back.)

**Hunt for Support**—BDSA (which operates such advisory offices as the Iron & Steel Div., the Metalworking Equipment Div., and the Auto-

tive Div.) has been busily lining up support in the Senate for the \$3.5 million it needs to operate in the 12-month period starting July 1. The Senate is now disposed to vote this much.

**House Is Tough**—But the difficulty will lie in the Senate-House conference which will adjust the differences between the Senate and the House bills. The House voted not a penny for BDSA. The Senate probably will vote the entire \$3.5 million. The amount to be actually appropriated therefore will be somewhere between zero and \$3.5 million. With luck, BDSA may win nearly the entire sum, and will have to make only minor adjustments in its operating machinery.



**how 75 ton  
BROWNHOIST  
combination crane  
will greatly increase  
GALVESTON  
port facilities**

The latest type combination boat-unloading crane being engineered and built by Industrial Brownhoist in Bay City, Michigan will substantially improve facilities in the Port of Galveston's 1957 expansion program.

This big, fast-working Brownhoist crane loads or unloads bulk materials from ship-to-cars or cars-to-ship at the remarkable rate of 540 tons per hour! Equipped with 75 foot boom, on which travel both a hook and a Brownhoist-made, 80 cubic foot flush link-type bucket. The entire unit straddles three railroad car tracks located on the pier.

In addition to boat unloading equipment and material handling bridges, Industrial Brownhoist manufactures Diesel-Electric locomotive cranes from 25 to 90 tons, and railroad cranes up to 250 ton capacities. If your firm can profit from reliable, high-speed, high-capacity material-handling equipment, write for new general Catalog No. 562.

201

# BROWNHOIST



CLAMSHELL BUCKET 250 TON WRECKING CRANE



COAL ORE BRIDGE



CAR DUMPER



LOCOMOTIVE CRANE

**INDUSTRIAL BROWNHOIST CORPORATION,  
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OFFICES:** New York, Philadelphia, Cleveland,  
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CORPORATION



# Steel Steps Up Sales Push

## Larger Eastern Shipments Ease Market

**Farwest mill and warehouse salesmen are getting toughest workout in five years.**

**Buyers are happy, however, as they enjoy faster delivery and improved service.—By R. R. Kay.**

■ Steel salesmen in other areas might envy West Coast sellers operating in an area with high consumer demand and mills running at full capacity.

Actually Farwestern mill or warehouse salesmen aren't having an easy time. They're working harder than at any time in the past five years.

**More From The East** — How come? Eastern steel is coming into the West Coast market at a fast rate. It's giving steel users their first break in years on many products. Fat backlogs are slimming down. Western mills, which supply only 50 pct of the area's needs, are finding buyers easing off on local ordering.

And bigger flow of sheet, light plate, and structural product from the East is bringing back stiff competition among West Coast warehousemen. But they're not cutting prices as yet.

Warehousemen are a bellwether in the fast-expanding Western area. They are bigger buyers of mill products than other regions of the U. S.

**Best Foot Forward** — Here's what's going on today:

(1) Warehouses are absorbing wastage on many products sold on a net weight basis. One major warehouseman puts it this way: "If a customer wants something cut to an odd size, we're a lot easier to talk to. We'll hope we can sell the

odd-sized remnants. But we doubt it—it's a scrap loss we have to take in today's market."

(2) Customers are now able to do some trading. They swap items in warehouse stock for material they have on mill order.

(3) Service is a reality, not a cliché. When warehousemen promise "fast delivery," they really hustle.

## Anti-Missile Missiles Are The Latest

Seattle's Boeing Airplane Co. may use its Bomarc guided-missile know-how to design a system for thwarting ballistic missiles.

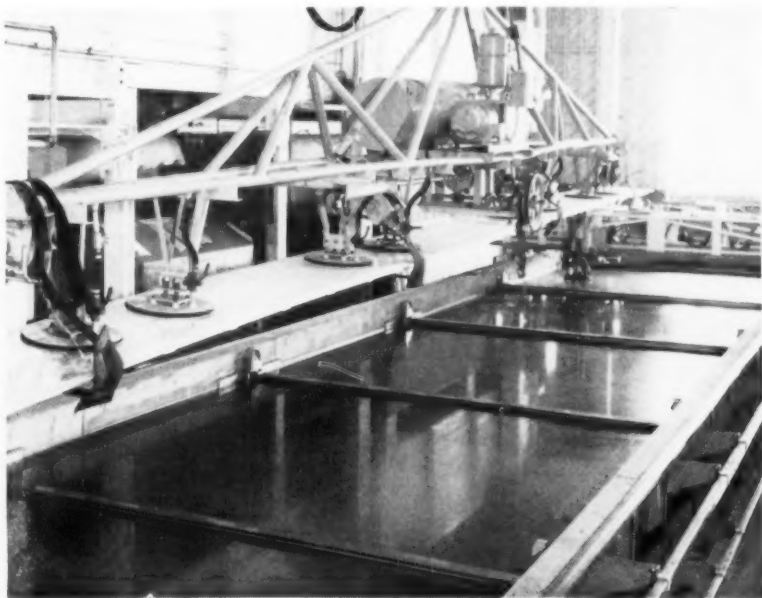
The anti-missiles would streak to great heights to explode enemy ballistic missiles—believed to be

at least two years away from operational status. The anti-missile could be developed in time to meet their threat.

To meet up with a 5000-mile-per-hour ballistic missile before it could strike, an anti-missile would really have to travel.

**Aircraft Interceptors On Way**—The Bomarc anti-aircraft missile is going into quantity production. Boeing Airplane Co., Seattle, got a long-awaited initial contract for \$7 million from the U. S. Air Force. The company says it will subcontract about 70 pct of the work.

It's reported that the ground-to-air interceptor missile can go at twice or three times the speed of sound. It has a rocket engine and twin ramjet powerplants. It can use conventional or nuclear warhead.



**PORTRAIT BY SOUND:** Extrusion for wing of Lockheed's Electra transport is ready for immersion in ultrasonic testing tank. Sound waves will survey the part and relay results to a control console viewing scope.

ever see a **METAL SAW**

that thinks  
for itself?



**MARVEL SAWS'**  
Automatic "Brain"  
Adjusts Blade  
Feed Pressure  
and Depth on  
Every Stroke to

**GIVE YOU FASTER  
CUTTING-OFF**

The exclusive automatic Dual Power Feed built into every MARVEL Series 6 and 9 Hack Saw is the "brain" that adjusts and compensates both pressure and depth of feed correctly in proportion to the number of blade teeth in contact with the work. Once the MARVEL Dual Feed is set, no operator attention is required to insure that the blade is cutting as deeply as possible and practical on every stroke . . . regardless of the changing area of the work being cut. Whether the Saw is being used for continuous automatic cut-off of identical pieces or a single cut, the MARVEL Dual Feed that practically "thinks for itself" guarantees that the work is cut-off in the fewest possible number of strokes.

Heavy duty MARVEL Series 6 and 9 Hack Saws embody every practical design and operating feature to give you speed, accuracy and operating economy you can find in no other metal cutting saws.

Write for the MARVEL  
Catalog and complete  
details on MARVEL  
Saws



**ARMSTRONG-BLUM MFG. CO.**  
3700 BLOOMINGDALE AVE. • CHICAGO 39, ILL.

**MARVEL** *Metal Cutting*  
**SAWS**  
Better Machines—Better Blades

S-1304

# Put Machine Research To Work

## Properly Used Data Are Worth Effort

**Finding the most economic cutting speed is one aim of General Electric's machinability program.**

**Here's how firm turns research data into production-line increases.—By E. J. Egan, Jr.**

■ If you want to machine metal more efficiently, don't throw your hands up in confusion at the lack of uniformity in metal cutting research data.

It's true that much of the available information is contradictory and misleading. But it is possible to sort out worthwhile techniques and data for use in your shop. What's more, the results should be well worth your time and effort.

**Computer Used**—Listen to Dr. William W. Gilbert, manager of machinability development for General Electric Co.:

"A complete machinability program was organized in the following steps: (1) A review and analysis of all machining data; (2) Organization of data into simplified form for shop usage; (3) Development of a computer to allow use of the data without resorting to complicated mathematics; (4) Training men to apply data-indicated techniques to improve machining efficiency."

Dr. Gilbert says this scientific approach has produced some substantial production increases. In most cases, metal cutting rates were doubled; in some instances, rates were increased as much as 10 times.

**Hit Balance Point**—GE drives hard for what Dr. Gilbert calls "economic cutting speed." It isn't the fastest rate at which you can put machined parts on the floor.

That just murders tool life. Instead, it's a neat point at which cutting speed, cost of machine operation and tool-changing costs balance out to yield minimum cost per piece.

The balance point shifts, too, as better adjustments are found for these minimum-cost-per-piece variables. For example, use of disposable carbide tips to cut tool-changing cost.

**Cut Cost, Speed Cutting**—These were used on one job to machine 321 stainless at from 600 to 1200 fpm, even though tool life was only 4 minutes. Because the machine was a vertical turret lathe, the short tool life didn't require frequent shutdowns; worn tools in the turret were changed while others were machining.

The chief benefit was a 65 pct reduction in cost per piece compared to the old setup which used brazed carbide tools at slower cutting speeds. Bonus benefits included better surface finish, less distortion in workpieces and all-around closer tolerances.

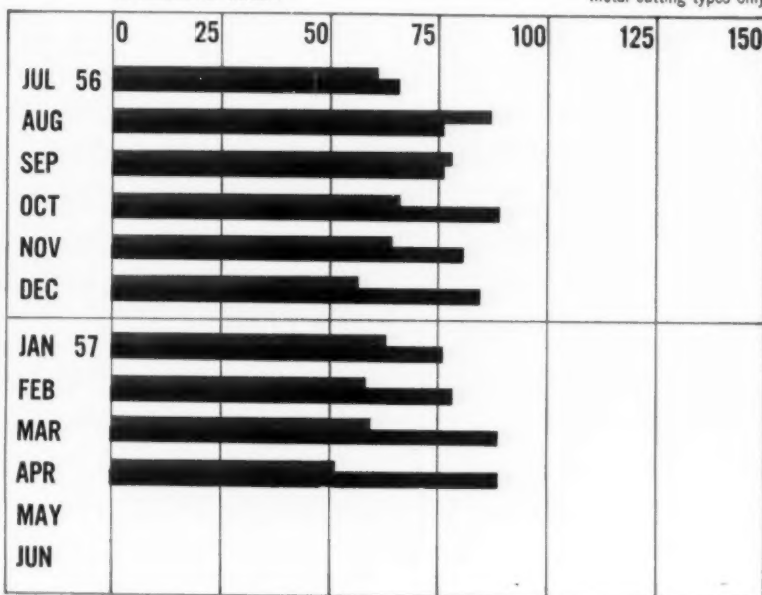
On another job, interrupted cuts caused brazed carbides to chip. A switch to "piggy back" carbide tools with high negative back rake cut machining time 82 pct.

Dr. Gilbert can reel off a whole string of these success stories developed through GE's machinability project. He says they're simply "the result of trained men applying known facts or laws of metal cutting to conventional machining operations."

## MACHINE TOOLS 1956/57

In Millions of Dollars

Metal cutting types only



■—Net New Orders ■—Shipments

Source: NMTBA

## INDUSTRIAL BRIEFS

**Check Your Irons**—The Houston, Tex., plant of General Electric's Distribution Assemblies Dept. is nearing completion of its \$500,000 expansion and modernization program. An open house will be held on June 7 to show the new facilities to contractors, distributors, engineers, industrial and utility officials.

**Rolling Stock**—Griffin Wheel Co., Chicago subsidiary of American Steel Foundries, has started regular manufacture of EQS cast steel wheels for railway freight cars at Colton, Calif. EQS wheels are made of electric furnace steel in permanent graphite molds through a unique pressure-pouring system. The Colton plant has a capacity of 120,000 wheels per year.

**More Nuclear Power**—Walter Kidde Nuclear Laboratories has received a contract to perform consulting services on the Pennsylvania Advanced Reactor Project. The project is a major development effort sponsored jointly by the Pennsylvania Power & Light Co. and Westinghouse Electric Corp. leading to the design of an aqueous homogeneous reactor plant having an electrical output of 150,000 kw.

**Silicones in Carolina**—A Dow Corning plant for manufacturing silicone consumer products is being built at Greensboro, N. C. A Silicone Specialties Div. will be established to operate as a separate unit. Sales and administration offices of the division will remain at the home offices in Midland, Mich.

**Good Neighbor**—Thomaston High School was up against it. Its instructor in mechanical drawing and woodworking for the senior class had resigned. And with six weeks still to go in the school year, Plume & Atwood Manufacturing Co. was asked to help. It came through by providing one of its engineers, Frank Tracy, to instruct the classes at the high school until the end of the school year.

**Driverless Carriage**—Lear, Inc., has developed a system for remote control of vehicles. A vehicle may be used for obtaining data for information from remote, hazardous, or otherwise inaccessible areas via a television transmitter. It may be controlled by radio or through an electrical cable which permits a variety of driver locations. Manual operation is not hampered, and quick switch-over from manual to remote control is easily accomplished.

**Iron Horses**—U. S. Steel Corp. has ordered eight industrial locomotives from General Electric. The diesel-electric units are rated at 80-85 tons. They will be put into service at U. S. Steel's plants in Gary, Ind., South Works at S. Chicago and its Duquesne Works at Duquesne, Pa.

**Thinking Big**—An intensified program of sales and service in its line of galvanized ware has been initiated by Jones & Laughlin Steel Corp.'s Container Div. The program includes a retooling project at the Toledo plant, the appointment of five new sales representatives, and the transfer of a company salesman.

**World's Record**—For the second time within two years a world's record in blast furnace production has been established by the Fairless Works of U. S. Steel Corp. Its own previous record was the Hazel Furnace, with a total production of 62,370 tons for the month of April. In Oct. 1955, the Hazel broke all established world's records with a total production of 61,808 tons.

**Enlarging the Store**—Joseph T. Ryerson & Son, Inc. is expanding its program at its Pittsburgh, Pa., steel service plant which will increase capacity more than one-third. Construction will begin this year with completion in 1958. Cost of the building, machinery, and operating equipment is estimated at approximately \$1 million.

**Arrow Lands**—The Bowsteel Distributors Corp., Linden, N. J., doing business as a warehouse outlet for aircraft quality alloy bar, announces the opening of a warehouse in Montreal, Canada, on June 1. The warehouse will stock complete aircraft quality alloy grades and shapes.

**But Good Carbides**—The Carmet Div. of Allegheny Ludlum Steel Corp. has begun operations in a new plant at Bad Axe, Mich. The facility, to produce cemented carbide tools, will receive its raw materials from the Carmet parent plant in Ferndale. The plant is expected to be in full operation by July 1.

**Boiler Additive**—Formation of an industrial equipment division and appointment of Ross Engineering as its Northern Illinois sales and engineering representative has been announced by Water Tube Boiler & Tank Co. New division will be known as Wa-Tu-Bo Industrial Equipment Div.

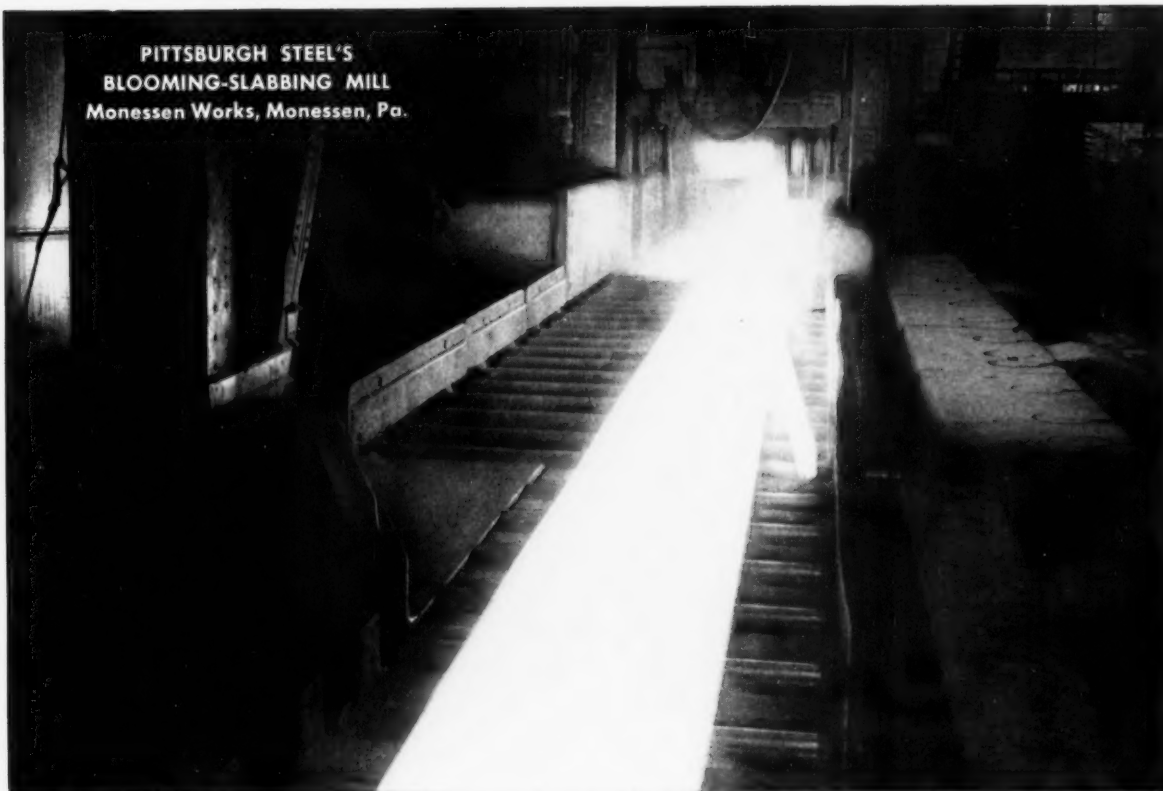
**Bar None**—Orders for round Rex High Speed bars will now be supplied with an improved finish by Crucible Steel Co. of America. The bars are 1/4 in. round and larger. This new finish offers the consumer the advantage of greater uniformity from bar to bar, closer tolerances, and weight saving.

**Satisfaction Is Mutual**—The U. S. Atomic Energy Commission has awarded two safety awards to the Bettis atomic power division of Westinghouse Electric Corp. One is for the time interval from Sept. 28, 1954 to March 21, 1955 when 2.1 million manhours were worked without lost time. The other represents 1.8 manhours without lost time from July 26, 1956 to Oct. 2, 1956.

**New Link**—According to the Massachusetts Dept. of Commerce, the city of Holyoke, Mass. is undergoing an unprecedented economic expansion. Acme Chain Corp. has completed its move into a new \$800,000 building in the Springdale Industrial Park, the third largest among the Commonwealth's 27.



**PITTSBURGH STEEL'S  
BLOOMING-SLABBING MILL**  
Monessen Works, Monessen, Pa.

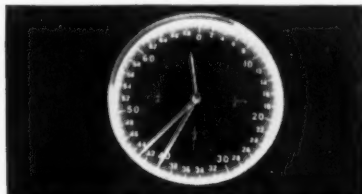


Time exposure shows continuous motion of red-hot ingot as it travels through roller.

## **"Never replaced screwdown or nut using Cities Service E. P. Lubricants!"**



**Circulating System** located on floor below mill, uses Cities Service E. P. Oils. Mill operates 160 hours a week, has never had lubrication failure.



**Dial Gauges Accuracy** to 1/32 of an inch. It is used by operators in the pulpit, who control the mill's 7000 horsepower and shape its steel to unusually fine tolerances for a blooming operation.

Ever since the installation of this blooming-slabbing mill at Pittsburgh Steel Company's Monessen Works, Cities Service E. P. Oils have been used for lubrication.

During that time, over 4,000,000 tons of steel have been run through the mill's huge rolls . . . but never once has the firm found it necessary to replace the screwdown, nut or any bearing due to lubrication failure.

A Pittsburgh Lubrication Engineer says: "Oils stay with the parts that must be lubricated and never give us a problem."

Where an inferior lubricant might be wiped away during the regular operation of the mill, Cities Service E. P. Oil withstands continuous operation. In addition, the oil can be centrifuged and yet not lose its additive.

Pittsburgh Steel is one of an increasing number of steel manufacturers who report outstanding results with Cities Service Lubricants. A Cities Service Lubrication Engineer will be happy to supply all the reasons. Or, if you prefer, write Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

**CITIES SERVICE**  
QUALITY PETROLEUM PRODUCTS

# *How to save on critical alloys and still get high alloy turbine performance*

## **USE "17-22-A" STEELS**

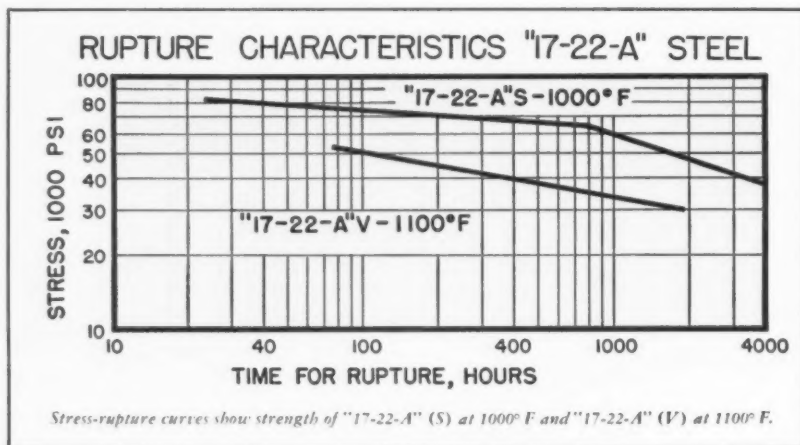
**Contain less than 3% alloy...give maximum strength to 1000° and 1100°F**

**Y**OU don't have to use an expensive high alloy steel for gas turbine or other parts that operate up to 1000° and 1100° F. You can use "17-22-A" steels made by the Timken Company—*low* alloy steels—to do the same jobs. They give *high* alloy performance, save critical alloys, cut costs. They contain less than 3% alloy, yet they give maximum strength up to 1000° and 1100° F.

You get more advantages. "17-22-A" steels resist heat checking and thermal cracking. They are readily workable up to 2300° F. They are easily machined and

welded. And maximum high temperature properties can be developed by normalizing and tempering, minimizing the possibility of distortion and quench cracking.

Send for complete information on "17-22-A" (S) steel, and its companion analysis, "17-22-A" (V), recommended for temperatures up to 1100° F. Ask for Technical Bulletin 36A. And call upon our technical staff for help with your high temperature steel problems. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".



# TIMKEN *Fine Alloy* STEEL

**SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING**

## MEN IN METALWORKING



**A. W. Roark**, named Western div. manager, Atkins Saw Div., Borg-Warner Corp.

**R. E. Cornwell**, elected president, Union Carbide Development Co., Div. of Union Carbide Corp.

**Woodman Perine**, elected president, Vitro Engineering Co., Div. of Vitro Corp. of America.

**George W. Gutekunst**, elected vice president and general sales manager, Gardner - Denver Co., Quincy, Ill.; **C. H. Rieman** and **Brice D. Maddox**, elected vice presidents.



**Leroy G. Greenert**, named superintendent, Rolling Dept., Butler Works, Armco Steel Corp.

**J. K. Banville**, elected asst. treasurer, Tennessee Coal & Iron Div., U. S. Steel Corp.

**William E. B. Mason**, appointed general welding superintendent, Thermal Products Div., Alco Products, Inc., Dunkirk, N. Y.



**R. P. Hindman**, named asst. general superintendent, Butler Works, Armco Steel Corp.

**Robert S. Sterrett**, named manager, Joliet, Ill., branch, The Matheson Co., Inc., E. Rutherford, N. J.

**J. B. Eaton, Jr.**, named superintendent, Compressor Station Dept., Texas Gas Transmission Corp., Owensboro, Ky.

**T. J. Ludwa**, named asst. sales manager, Calumet Steel Castings Corp., Hammond, Ind.

**John L. Hupman**, named manager, sales development for non-automotive products, L. A. Young Spring & Wire Corp.



**John F. Cachat**, named works manager, Tocco Div., The Ohio Crankshaft Co., Cleveland.

**Wallace M. Schleicher**, named manager, motive power and railroad sales, C & D Batteries, Inc., Conshohocken, Pa.

**Norman F. Garrett**, appointed general manager, Chicago Works, Crane Co.

**Joseph F. Craig**, appointed area manager, Detroit district office, Westinghouse Electric Corp.

**Lester J. Henderson**, elected vice president, sales, Republic Manufacturing Co., Cleveland.

**Philip S. Hill**, elected executive vice president, Hyster Co., Portland, Ore.



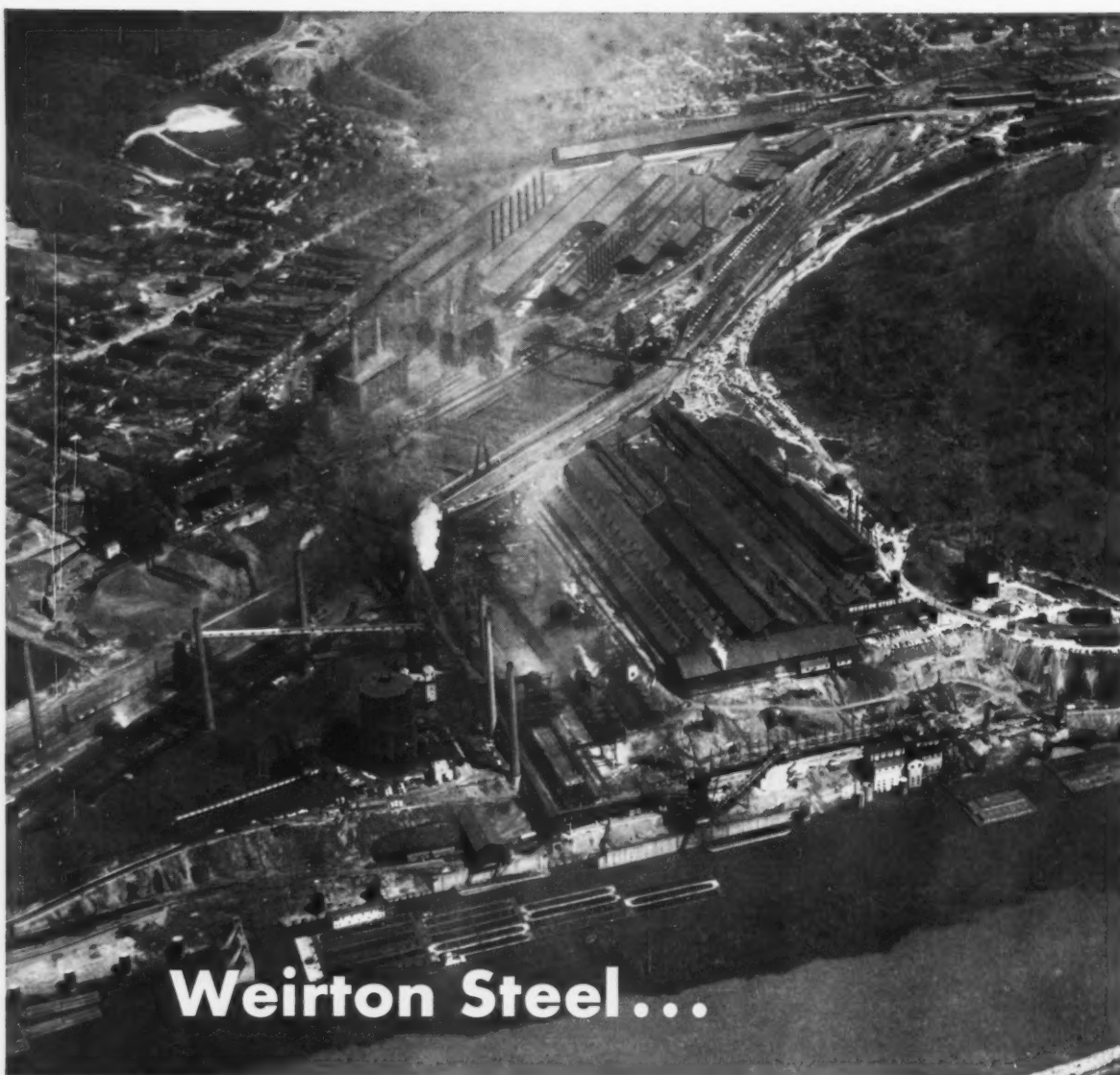
**William R. Gealey**, named asst. general superintendent, Butler Works, Armco Steel Corp.

**Edgar G. Platt**, named general works manager, Refractories Div., H. K. Porter Co., Inc.

**James E. Burke**, appointed manager, alloy and stainless steel sales, Pittsburgh steel service plant, Joseph T. Ryerson & Son, Inc.

**George E. Herrman**, named manager, commercial automotive sales, Aluminum Co. of America.

**James O. Clevenger**, named general manager, Bryant Electric Co., subsidiary of Westinghouse Electric



## Weirton Steel...

**11 year continuity  
in oxygen production  
with "on-location"  
generators**

Since 1946, Weirton Steel Company, a division of National Steel Corporation, has obtained its oxygen requirements from "on-location" generators... designed and built by Air Products, Incorporated. Present production capacity is 300,000,000 cu.ft./mo. of low-purity (95%) and 35,000,000 cu.ft./mo. of high-purity (99.5%) oxygen... for all uses from blast furnace air enrichment to scarfing.

Many steel companies obtain low-cost oxygen from dependable Air Products generators in many combinations of quantity, purity and pressure.

We produce: package, tonnage and custom-built oxygen and nitrogen generators. Check with us for detailed information on a dependable and continuous supply of low-cost oxygen. Air Products, Incorporated, P.O. Box 538, Allentown, Pa.

*Air Products*  
...INCORPORATED



## Weirton Steel...

...put three 2,000 cfh oxygen generating plants (total—4,000,000 cf/month)—built by Air Products—into operation over eleven years ago. Since that time, Air Products has met the increasing needs for oxygen at Weirton by supplying additional oxygen facilities (up to the present 335,000,000 cf/month total capacity).

This continuity of a low-cost supply of oxygen over the years has been possible only through the use of dependable "on-location" generators—designed and manufactured by Air Products.

Continuity of supply at Weirton is a typical benefit resulting from steel companies' use of "on-site" oxygen generators. Other steel companies enjoy such profitable advantages as: substantial reductions in oxygen cost...dependable production of high purity oxygen 24 hours/day...flexibility in meeting increased or decreased demand through proper equipment sizing. Even plants requiring limited quantities of oxygen can profitably use Air Products generators.

Let us show you how you can have a dependable low cost supply of oxygen without capital investment. Air Products "on-site" oxygen generators supply many of the nation's leading steel plants. We'd like to talk to you about them... your inquiry is invited. Air Products, Incorporated, P.O. Box 538, Allentown, Pa.

*Air Products*  
...INCORPORATED

Corp.; **Leonard N. Goodell**, named manager, electrical products and **Fenton L. Tippet**, appointed manager, mechanical products, Sunnyvale Div. of Westinghouse.

**James A. Kearney** and **Robert A. Pitcairn**, named group leaders, development group, Crucible Steel Co. of America.

**Philip A. Scheuble, Jr.**, named general manager, Vap-Air Div., Vapor Heating Corp.

**Louis E. Dondero**, named manager, West Allis plant, Le Roi Div., Westinghouse Air Brake Co., Milwaukee.

**R. A. Biggs**, named manager, architectural section, Market Research Div.'s Sales Dept., Electro Metallurgical Co; **R. L. Vroome**, named manager, aircraft section.

**Robert A. Lebowitz**, appointed asst. to manager, manufacturing, Polytechnic Research & Development Co., Inc., Brooklyn, N. Y.

**Thomas K. Piper**, named engineering manager, Pittsburgh branch engineering office, The Atlas Mineral Products Co., Mertztown, Pa.



**Jesse D. Marino**, named chief engineer, Duquesne Works, U. S. Steel Corp.

**Arnold L. Rustay**, named technical director, Wyman-Gordon Co., Worcester, Mass.; **Marion E. Cieslicki**, named director of research.



**Arthur J. Stock**, appointed research and development manager, Acheson Colloids Co., Port Huron, Mich.

**H. Rodman Smith**, appointed asst. sales manager, Milton Roy Co., Philadelphia; **John Procopi**, named sales manager.

**Gordon Van Dyke Miller**, named divisional manager, Philadelphia Sales Div., The Crouse-Hinds Co., Syracuse, N. Y.



**Lloyd W. Lewis**, named sales manager, Eastern district, Vanadium Corp. of America.

**William B. Denniston**, named sales manager, Panellit, Inc., Skokie, Ill.

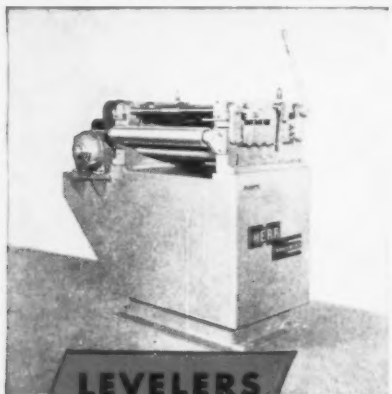
**Don C. Atkins, Jr.**, named asst. chief engineer, United States Chemical Milling Corp., Manhattan Beach, Calif.

**Jim Colfer** will head new products sales, C & H Supply Co., Ingle-

# HERR

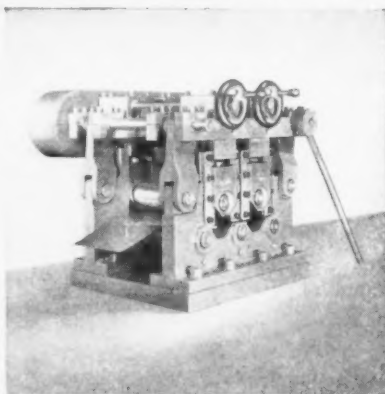
## EQUIPMENT

**"Complete Processing and Handling Equipment . . . for any Ferrous or Non-Ferrous Material . . . That Starts — or Ends — as a Coil"**



**LEVELERS**

2-High and 4-High types. Driven and pull-through designs with quick release, for handling an extremely wide range of materials, widths and gauges. Rolls can be rubber covered if desired for easier adjustment and handling high finished materials.



**COILING REELS**

Wide variety of types and sizes for coiling ferrous and non-ferrous strip. Fixed, adjustable or automatically aligning bases. Automatic oscillating level winding drive if desired. Link type contracting mandrels; manually or hydraulically operated. Furnished complete ready for use.

Write for fully descriptive Bulletin No. 561 today!



**THE HERR EQUIPMENT CORPORATION**

**1260 VINE STREET • WARREN, OHIO**  
CLEVELAND, INDIANAPOLIS AND BERKELEY, CALIFORNIA

wood, Calif.; **Jim Collins** will head up Metal-Cal's expanded research and development program.

**Clarence C. Smith**, named director of engineering, Tranter Mfg., Inc., Lansing, Mich.

**Thomas W. King**, named national sales manager, Hydraulic Accessories Co., Van Dyke, Mich.



**John J. Green**, named manager, wrought steel service, Vanadium Corp. of America.

**William J. Schaller**, named Wisconsin sales representative, Industrial Gear Mfg. Co., Chicago.

**E. J. Prince**, named chief operator, Steel Plants Development Div., Kaiser Engineers, Div. of Henry J. Kaiser Co., Oakland, Calif.

**John R. Welsh**, appointed asst. general purchasing agent, American Brake Shoe Co., New York.

**Anthony Del Duca**, named chief electronics engineer, Process Instruments Div., Beckman Instruments, Inc.

**John H. Wright**, appointed field engineer, Nelco Tool Co., Manchester, Conn.

**Gerson Lewis**, **Thomas J. McLaughlin**, **A. Gerald Merlin**, **Sheldon Simon**, elected vice presidents, Loral Electronics Corp.; **Arthur Koteen**, named asst. treasurer.

**Charles K. Johnson**, named sales engineer, Electronics and Instrumentation Div., Baldwin-Lima-

Hamilton Corp., Schenectady, N. Y., sales office.

**Charles C. Flory**, appointed Pittsburgh district sales manager, Refractories Div., H. K. Porter Co., Inc.; **Ralph R. Rose**, named manager, basic refractories project, Refractories Div.

**F. J. Woodland**, appointed assistant sales manager, Columbus branch, Wheeling Corrugating Co.

**T. L. Freeman**, named sales engineer, Los Angeles district office, The Cooper-Bessemer Corp.



**William J. Killian**, named asst. district manager, Pittsburgh district, Vanadium Corp. of America.

**W. Gerald Lanterman**, named manager, sales, Industrial Div., Lamson Corp., Syracuse, N. Y.

**George S. Evans**, named manager, fluorescent lamp engineering, Westinghouse Electric Corp.

**Gerald A. Weimer**, appointed chief industrial engineer, United Steel Fabricators, Inc., Wooster, O.

#### OBITUARIES

**Leon A. Doughty**, 70, president, C & D Batteries, Inc., Conshohocken, Pa.

**Frank M. White**, 60, vice president, The Stanley Works and general manager, Pressed Metal Div., New Britain, Conn.

**John F. Livingston**, 57, asst. plant engineer and safety director, Crouse-Hinds Co., Syracuse, N. Y.

# WILLIAMS

## VULCAN® HOIST HOOKS

**NEW... SAFER!**  
**60-70 ton  
CAPACITIES**

CAPACITY TONS OF 2000 LBS.			
No.	Safe Working Load F.S. = 4	Avg. Load At Elastic Limit	Approx. Load To Straighten Out
17	58.75	153	235
17A	68.75	178	275

**THE ONLY HOOKS  
OF THESE CAPACITIES  
DROP-FORGED IN  
CLOSED DIES**

**REMEMBER... It takes  
5 or more competitors  
to match WILLIAMS  
THE BROADEST LINE  
OF ITS KIND**

VULCAN

These hooks introduce a new degree of accuracy and uniformity of size, shape and rating to the heavy capacity range of shank pattern hoist hooks. They assure you dependable service in the safer handling of heavy equipment. And... like all the other Vulcan® hooks in the Williams line... are proof-tested, after heat-treatment, beyond listed safe working load capacity.

Your local Williams distributor will give you the fastest service at lowest cost.

For detailed data on tools in the "Broadest Line of Its Kind"... WRITE FOR CATALOG 303.



## J. H. WILLIAMS & CO.

431 VULCAN STREET, BUFFALO, N. Y.

BUFFALO • NEW YORK • CHICAGO • LOS ANGELES

TO GET  
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ACCURATE  
PROMPT  
METAL STAMPING  
SERVICE

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DIAM. — 6"  
THICKNESS .025

"Old Hands" at  
cold forming in  
all metals.



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CARLSTROM PRESSED METAL CO., INC.

## TECHNICAL BRIEFS

# Holds Precise Heat On Annealing Line

Varying speed, strip widths and thicknesses on continuous annealing lines causes frequent load changes.

Despite these changes, one producer holds temperatures to narrow tolerances. Heating costs are down, production up.

■ In its continuous annealing operations one steel strip producer encounters frequent load changes. These are due to varying speeds and different strip widths or thicknesses.

To hold annealing temperatures precisely even with such load changes, the company uses an interlocked instrument control combination.

Known as "cascade control," this unit is part of a complete temperature regulator system in use at The Steel Company of Canada, Ltd., Hamilton, Ont. The setup uses a radiation pyrometer to rapidly detect the effects of load changes; it then resets individual zone controllers. This permits temperature control within narrow tolerances on a completely automatic basis.

**Strip Speeds By** — Designed by Leeds & Northrup Co., Philadelphia, the complete temperature control system works on high speed lines. In addition to cascade control of zone heat inputs, a similar system measures and controls the exit strip temperature from the controlled cooling zone.

The steel company justifies its extensive instrumentation setup on the basis of its high degree of flexibility in maintaining quality tonnage production in the face of operating variables. Heating costs are down and production rates up, the firm reports.

**No Pickling Here** — An electri-

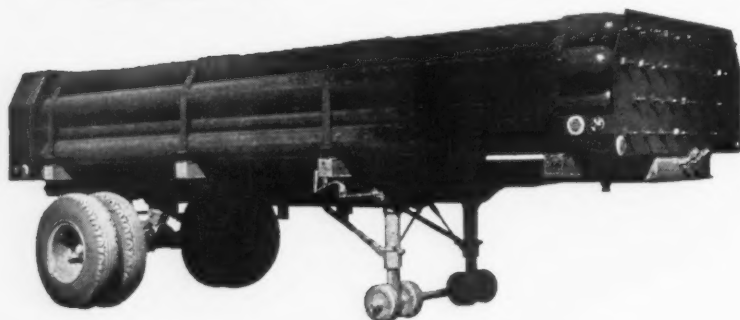
## Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 121. Just indicate the page on which it appears. Be sure to note exactly the information wanted.



## with INDEPENDENT Gas Supply TRAILERS

**TRANSPORTING** — Argon — Carbon Dioxide — Helium — Nitrogen — Oxygen — Boron Trifluoride — Hydrogen — Ethylene. Trailer capacities from 187,000 cu. in. to 750,000 cu. in. water capacity. Trailer tubes ICC3A-2400 Specifications with 2400 PSIG Working Pressure.



Sizes and weights to meet  
all State requirements.

Can be mounted on bases  
for permanent storage.

INDEPENDENT ENGINEERING Co., Inc.

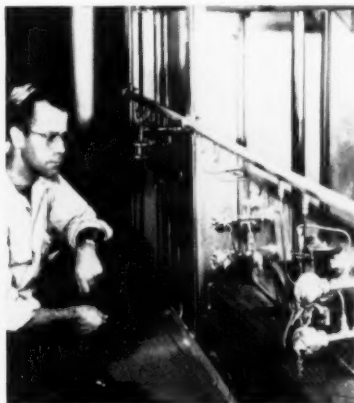


O'FALLON 4, ILLINOIS



cally-heated furnace on the line, designed and constructed by Drever Co., has an installed input of 3000 kw. It has a rated production of 37,000 lb per hr with 32-gage strip 33-in. wide, running at 550 fpm. It normally handles 35 to 25-gage strip and 19 to 38-in. widths. The furnace is provided with a protective atmosphere to insure a clean strip which does not require pickling prior to tin plating.

The strip travels up and down a distance of some 42 ft through 12 individually controlled heating



**Thermocouples are installed through the furnace wall.**

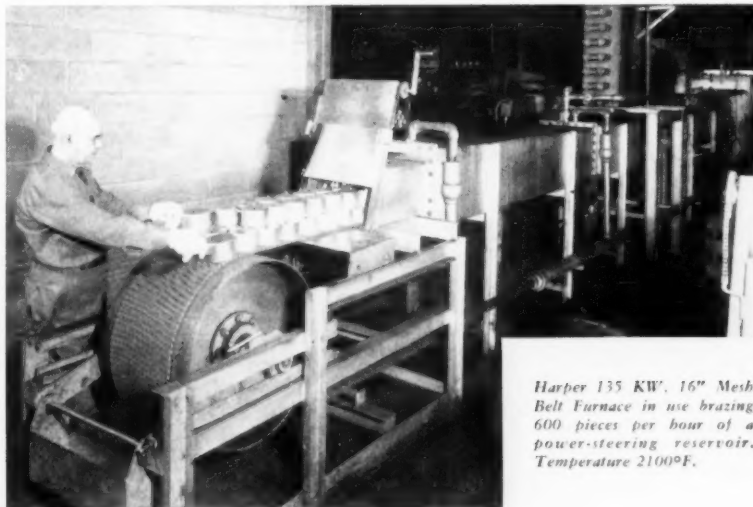
zones. Following are a soak zone, a controlled cooling zone, a final, uncontrolled cooling zone, and a quench. For the heating and soak zones, strip chart recorder-controllers measure the zone temperatures with thermocouples installed through the furnace walls. These instruments regulate current input to electric heating elements in each zone.

**More Precise Regulator** — The two controllers for zones one and two are not reset from the master radiation pyrometer. This is because the furnace uses maximum input to heat the entering strip. These controllers employ a more precise type control: current-adjusting, proportioning with automatic reset and rate action. This regulates the temperature through saturable core reactors.

One radiation detecting element sights directly on the strip as it leaves the last heating zone. It is

# Want Higher Furnace Production? . . . .

## MODERNIZE WITH HARPER HIGH TEMPERATURE MESH BELT FURNACES



*Harper 135 KW, 16" Mesh Belt Furnace in use brazing 600 pieces per hour of a power-steering reservoir. Temperature 2100°F.*

If you need up to 50% greater continuous furnace capacity without increasing space; and if your operating temperature range is 1800°-2100°F, a modern Harper Mesh Belt Furnace may well be the answer to your requirements.

These compact continuous furnaces are designed to utilize fully the advantages of silicon carbide heating elements\* and today's high temperature oxidation-resisting alloy mesh belts.

Silicon carbide resistance heating elements allow high concentration of heat in a small space, thereby providing considerably greater production than furnaces of similar size using ordinary nickel alloy elements. Silicon carbide elements are also replaceable without complete furnace shutdown.

Two more important advantages of Harper Mesh Belt Furnaces are:

1. **MULTIPLE-ZONE HEAT CONTROL** — Heating elements are connected in

several individually-powered and controlled zones for maximum flexibility of the heating curve.

2. **PRODUCT UNIFORMITY** — Furnace design based on many years of experience plus properly applied control instrumentation means uniform product day after day.

There are many more plus values. These economical furnaces are designed for operation with all types of standard atmospheres. An automatic non-loading belt take-up mechanism adjusts belt tension without reducing useful belt loading. A small water-cooling chamber next to the hot zone can be readily removed for maintenance or replacement due to rapid oxidation.

Harper Mesh Belt Furnaces are available with or without alloy muffles. Matching preheat furnaces are also obtainable. For full information write for Bulletin 454 to Harper Electric Furnace Corporation, 49 River Street, Buffalo 2, New York.

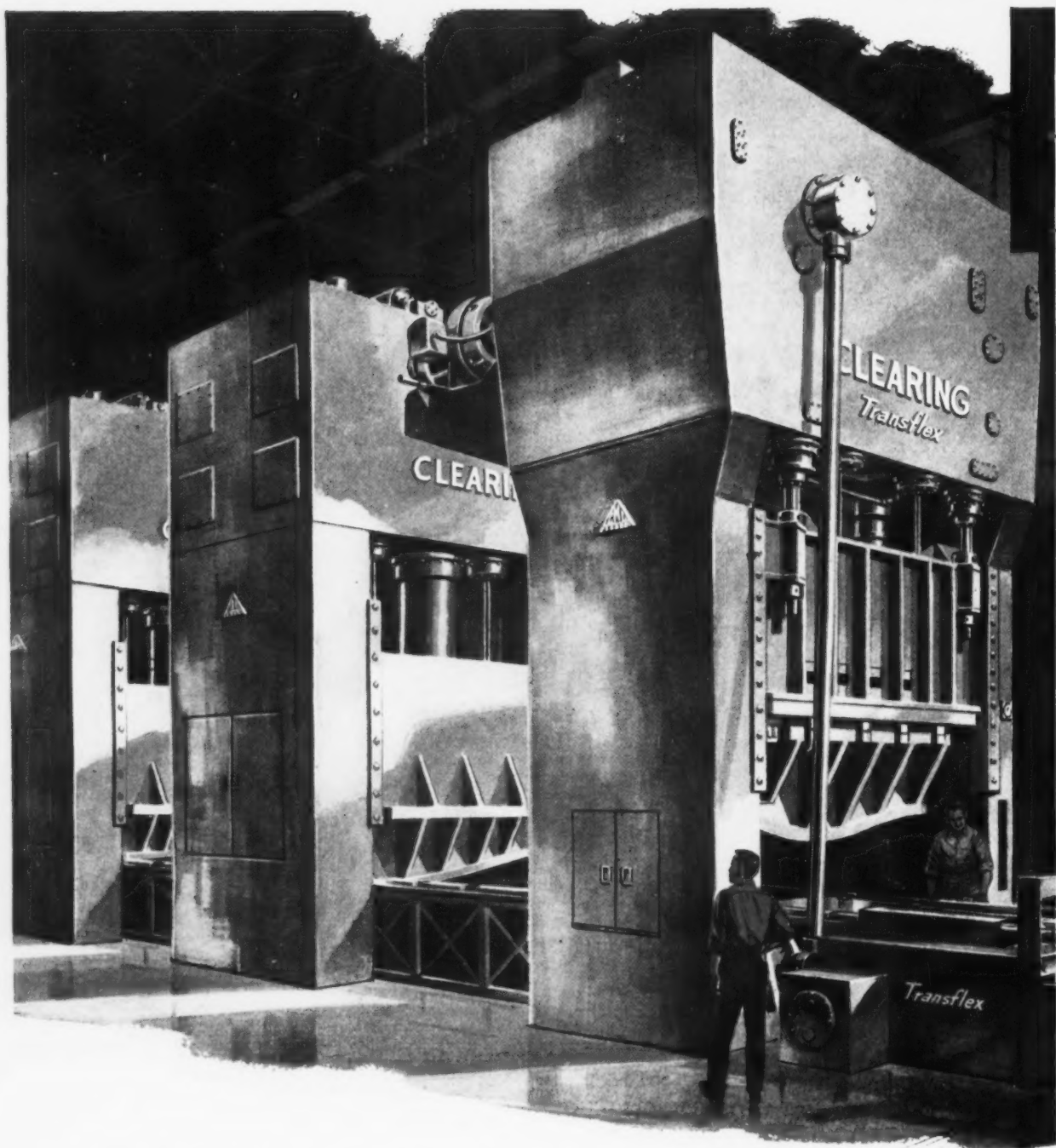
\*Nickel alloy elements available for lower temperature applications.



# HARPER

## ELECTRIC FURNACES

For Continuous Brazing, Sintering, Wire Annealing, Bright Annealing, Annealing, Forging and Research



The Clearing Lead Press setup as shown above gives you maximum flexibility for current production. The feed is powered by the Lead press supplying automated production for the entire line. Since the feed is Transflex, many different parts can be produced by making simple adjustments of the feed fingers. An automated line like this is comprised of standard presses so that if future requirements demand a reorganized setup all the equipment can be utilized.

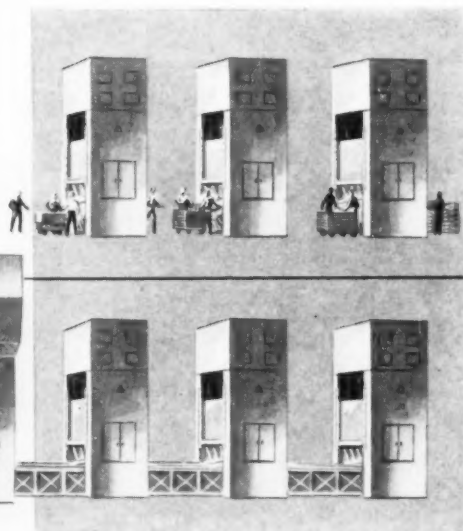
## CLEARING PRESSES

CLEARING MACHINE CORPORATION *Division of U. S. INDUSTRIES, Inc.*

# LEAD PRESS

...another **CLEARING** Transflex concept that can help you automate production at **MODERATE COST**

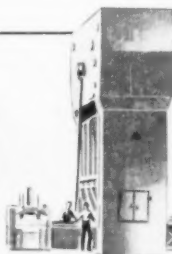
Here you have a press line where presses are individually operated requiring a maximum of manpower and a great deal of parts handling and in-process storage.



Now add a Clearing single or double action

## LEAD PRESS

and automate the entire setup for a relatively moderate investment in equipment.



Let's say you have a line of existing presses. Right now you're operating them individually with slide tables in between—or maybe you're running lift trucks with tote boxes all over the plant from operation to operation. Here's a way to coordinate production and streamline the whole setup for more—a lot more—efficiency and economy. A Clearing Lead press equipped with a Transflex feed can reorganize your existing presses into a fully automated line. Hands off operation from start to finish and no trouble about job changeover either. A Transflex feed is readily adjustable to

accommodate parts with varying dimensions. And, when necessary, you can move the automatic feed out of the way and run the presses independently again. Look into the Lead Press idea. Write or call Clearing for further information.

THE WAY TO EFFICIENT MASS PRODUCTION

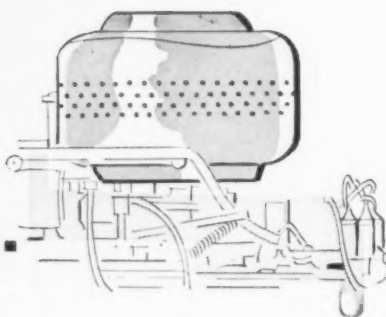
6499 W. 65th Street • Chicago 38, Illinois • Hamilton Division, Hamilton, Ohio





**for raisins**

**or car  
engines...**



**you can use**



## INDUSTRIAL WIRE CLOTH

Versatile CF&I Industrial Wire Cloth helps assure the housewife of stem-free raisins and the automobile driver of an efficient vehicle. For raisin processors stem their raisins with a special CF&I Wire Cloth that has both round and square wires... and other specialized types of cloth are used in air filters for automobile engines.

If you make raisin-stemming equipment... air filters... or any other product which screens, filters, grades, cleans, processes or requires reinforcement, it'll pay you to get the complete story on CF&I Industrial Wire Cloth. Produced to your most exacting specifications, CF&I Industrial Wire Cloth can be

supplied in a wide variety of weaves and meshes made from ferrous or non-ferrous metals. Get the complete story from your CF&I representative today.

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WICKWIRE SPENCER STEEL DIVISION: Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans  
New York • Philadelphia

CF&I OFFICES IN CANADA: Montreal • Toronto

CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

## TECHNICAL BRIEFS

sighted up through the furnace bottom measuring the actual temperature of the moving strip. Similarly, a second unit measures the strip temperature as it leaves the soak zone. Under normal operation, both temperatures should be identical and only one is used, through a selector switch, to reset the zone controllers. The operator can occasionally switch to the unused instrument for a check of temperature at the alternate point.

A recorder-controller logs the selected strip temperature; it then electrically adjusts the set point of heating zone controllers three through 12, and also the soak zone temperature controller.

## Seek Better Battery

Navy researchers are pushing for an improvement in silver oxide-zinc alkaline batteries. They hope to do this through a possible increase in cell capacities of zinc alloy electrodes.

The aim of the project is to determine whether elements which alloy with zinc and change its crystalline structure and other physical properties will increase or decrease the capacity of the silver oxide-zinc alkaline cell. The study is as yet incomplete.

A report on the study is available through the Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C.

## Belt Moves Ore

Moving bulk materials by belt can prove both efficient and economical. Pointing this up are statistics released concerning a belt conveyor transporting ore at a South American location.

In use at Chile Exploration Co., Chuquicamata, Chile, the handling unit went into operation in 1939. By 1954 it had carried a total ore weight of 130,886,134 tons. The required capacity of the conveyor



# McKay

## High Production

## Draw Benches

Here's greater cold draw production at a substantially reduced cost! McKay's line of rugged, precision built equipment is designed to meet and exceed today's accelerated demands.

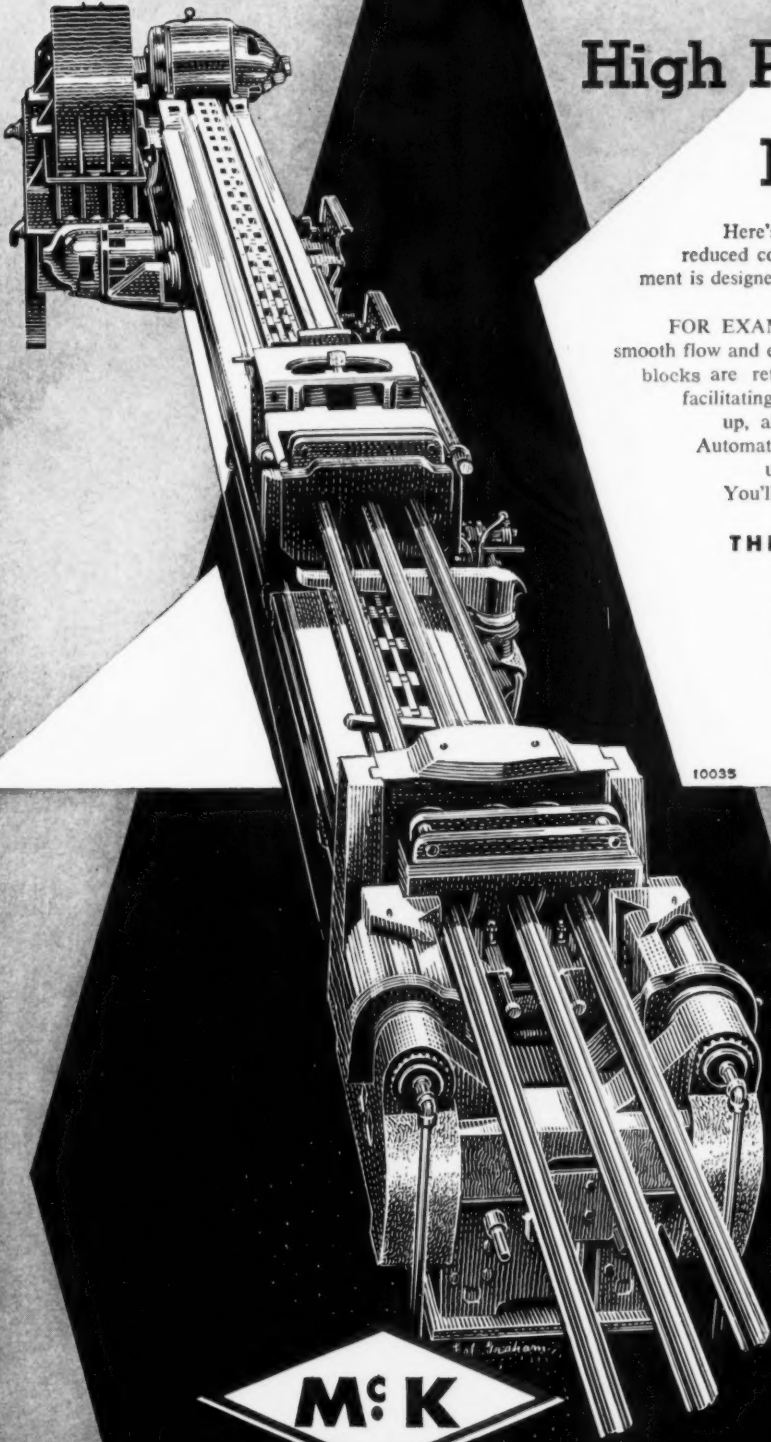
FOR EXAMPLE; Integral, centerline push pointing provides smooth flow and eliminates a costly operation. Die blocks and pusher blocks are retained in machined ways, eliminating bolts and facilitating change over. Carriage return speeds are stepped up, allowing more productive time in the draw cycle. Automated lines are possible merely by addition of standard units already proved and in operation.

You'll profit by calling a McKay sales engineer.

**THE MCKAY MACHINE COMPANY**

**Youngstown, Ohio**

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**M<sup>c</sup>K**

SETTING THE STANDARDS OF QUALITY METAL WORKING MACHINES FOR TWO GENERATIONS



*Number 1 in a Screw Research Association Series on Industrial Statesmen*

## **GEORGE ROMNEY** praises quality control

"Control that assures a good quality product is one of the most important assets any industrial organization can have. It takes consecutive purchases before

buyers realize that dependable quality is constant — but once they're really convinced, that good will lasts a long time. The more time you spend in improv-

ing production, and the more care you use in selecting top quality materials and parts, the easier it is for you to win your sales battle."

A stylized, handwritten signature of George Romney in dark ink.

*President, American Motors Corporation  
President, National Automobile Manufacturers  
Association*

# *Positive Protection for YOU in the Quality-Control of Phillips Screws*

## **Industrial Statesmanship You Can Depend On**

Screw Research Association members sponsor the Phillips Cross-Recessed Head Standards Committee that sets up the strict quality control for these fasteners. This means common adherence to the best possible dimensional standards using recommended inspection gauges and gauging methods.

Product reliability in Phillips Screws demands

that they be entirely trouble-free. Deliver every advantage inherent in the Phillips Recess design. Recess dimensions must meet the close tolerance standards established by the Phillips Cross-Recessed Head Standards Committee.

Phillips Screws made by these companies improve your products and reduce your production costs.



### *Members of Screw Research Association . . .*

American Screw Company • Atlantic Screw Works, Inc. • The Blake & Johnson Co. • Central Screw Company • Continental Screw Co. • Elco Tool and Screw Corporation • Great Lakes Screw Corp. • The H. M. Harper Company • The Lamson & Sessions Company • National Lock Company • The National Screw & Manufacturing Company • Parker-Kalon Division, General American Transportation Corporation • Pheoll Manufacturing Co. • The Progressive Manufacturing Company Division, The Torrington Company • Scovill Manufacturing Company • Shakeproof Division Illinois Tool Works • The Southington Hdw. Mfg. Company • Sterling Bolt Company • Universal Screw Company • Wales-Beech Corporation

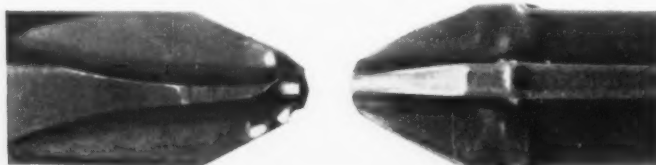
*You can rely on these sources . . . for product reliability*



Count on CONTINENTAL

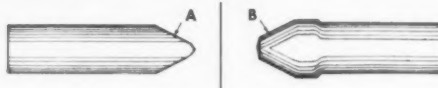
## for the HY-PRO PHILLIPS BITS that outlast other bits 2 to 1

Repeated tests made under assembly line conditions prove that Continental's HY-PRO Phillips Bits have an average service life *double* that of the best comparable bits. Reports from users, of their own experience on the job, show even greater margins of extra life for HY-PRO Bits, often as high as 4 to 1.



Best Comparable Bit      HY-PRO Phillips Bit  
Each Bit Drove Same Number of Screws

HY-PRO Bits are FORGED for longer life



As shown in the diagrams above, the strong outer fibers of the bit blank, which are removed in milled bits (A), are retained in the Hy-Pro forged bit, and concentrated at the point (B) where highest strength is required.

**Make your own tests** — Continental Assembly Specialists will cooperate fully in setting up tests. Compare bit life on your toughest driving jobs. Figure all costs . . . you'll find Continental's HY-PRO Insert Bits and Holders your best buy for production efficiency, for assembly economy.

Only CONTINENTAL makes both PHILLIPS BITS and SCREWS

HY-PRO Bits will give you a big margin of extra service life in assembly with any Phillips Screws. But, for maximum production efficiency, use the proved combination — HY-PRO Bits and HOLTITE Phillips Screws.

Precision control with the same Phillips master tools assures uniformly accurate fit of HY-PRO Phillips Bits and HOLTITE Phillips Screw recesses. It gives you the dependable fit you need in all production assembly, especially with power and automatic driving equipment, to avoid downtime, rejects, and weak fastenings. For full information, write: Continental Screw Company, 450 Mt. Pleasant St., New Bedford, Mass.



**POWER BIT  
HOLDERS**  
are made in types  
and sizes to fit  
all driving tools



MEMBER OF THE  
SCREW RESEARCH  
ASSOCIATION

## CONTINENTAL HOLTITE FASTENERS

HOLTITE PHILLIPS AND SLOTTED HEAD  
WOOD • MACHINE • TAPPING • THREAD CUTTING • SEMS • NYLOK  
HY-PRO PHILLIPS INSERT BITS AND HOLDERS





was originally 4200-tph. However, it has delivered at the rate of 5000-tph at times.

In 1954, the outfit replaced the 60-in. belt. Upon close examina-



**Moving ore at 600-fpm is this 1400-ft conveyor belt.**

tion of its condition, both manufacturer and user agreed that there were several million tons of life remaining in its tough hide.

The belt is 1412-ft long. It's part of an overall system totalling 18,485-ft which hauls copper ore at 600-fpm. Stephens-Adamson Mfg. Co., Aurora, Ill., is the belt's maker.

## Diecastings Cut Costs

Switching to diecastings slashes material and labor costs for a maker of motor fans. Not only that but production is speeded up also.

Since conversion to zinc diecastings Baldor Electric Co., St. Louis, reports its labor and material costs are down 49 to 61 pct in producing cooling fans for its motors. According to the manufacturer, it results in a better fan. Close tolerances possible with zinc casting eliminates most secondary operations, too.

**Good Balance**—Because of the high density of zinc and its resulting weight-dimension ratio, the re-designed fan is said to have very good balance. The piece made by the former method was inherently more irregular, frequently out of balance. It also required extensive machining and inspecting stages and incurred wasteful rejects.

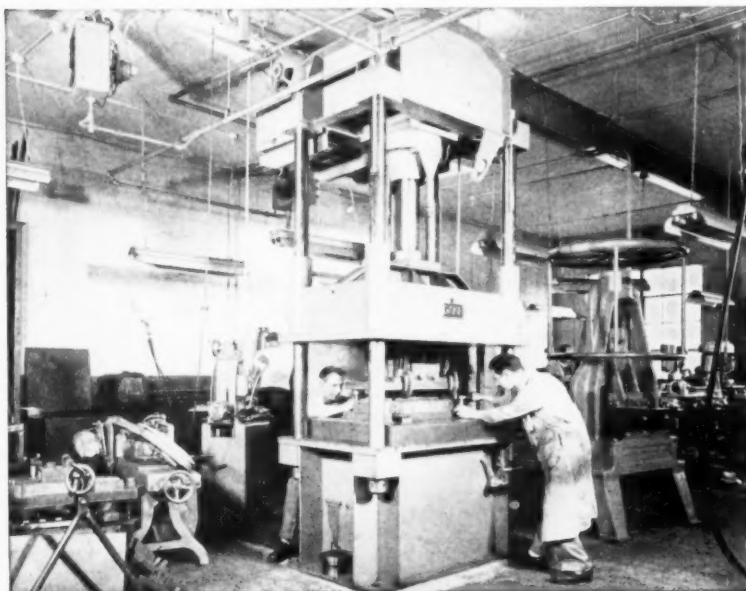
The shaft hole of the fan is held to within  $\pm 0.0005$ -in. diam as cast. No reaming is necessary, nor is any finishing required. The set screw hole is cored to finished size. Actually, the only operations needed to complete the zinc diecast fan are a trip and tapping of the cored set screw hole. No protective finishing is necessary because zinc is corrosion resistant.

**Cast Three Sizes**—The new zinc

## TECHNICAL BRIEFS

fans are diecast in three sizes: 4, 4 $\frac{3}{4}$ , and 5 $\frac{3}{4}$ -in. diam. The 4-in. diam fan is produced with a 55-pct savings over its predecessor; the 4 $\frac{3}{4}$ -in. diam fan realizes 49-pct savings; the 5 $\frac{3}{4}$ -in. diam saves 61 pct.

A. B. Mueller Co., St. Louis, performs the actual diecasting.



## The diemaker who made a nuisance of himself

This is the story of Three Star Manufacturing Co.—a custom diemaker who serves a number of manufacturing plants in Chicago.

As in most such shops, his only means of trying out dies was a hand power screw press which sometimes needed six or seven men to get the needed pressure.

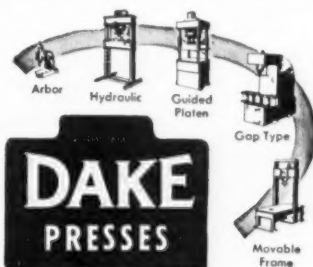
Large dies had to be tried out on his customers' production presses... which required drayage (\$15 to \$20 each way) and interruption of his customers' production. It meant both expense and nuisance to his customers and himself every

time a die had to be tested.

Now he has ended the nuisance by installing the press shown above in his own shop. It not only saves time and money, but avoids the embarrassment of having workers in his customers' plants see and know that occasionally a die must be taken back for adjustment.

Specifications for DAKE single-acting and double-acting die tryout presses in eighteen electrically operated models are contained in Bulletin 330. Write today for your copy!

**DAKE CORPORATION**, 602 Seventh St., Grand Haven, Mich.



## Send for Big New Catalog

**DAKE CORPORATION**

602 Seventh St., Grand Haven, Mich.

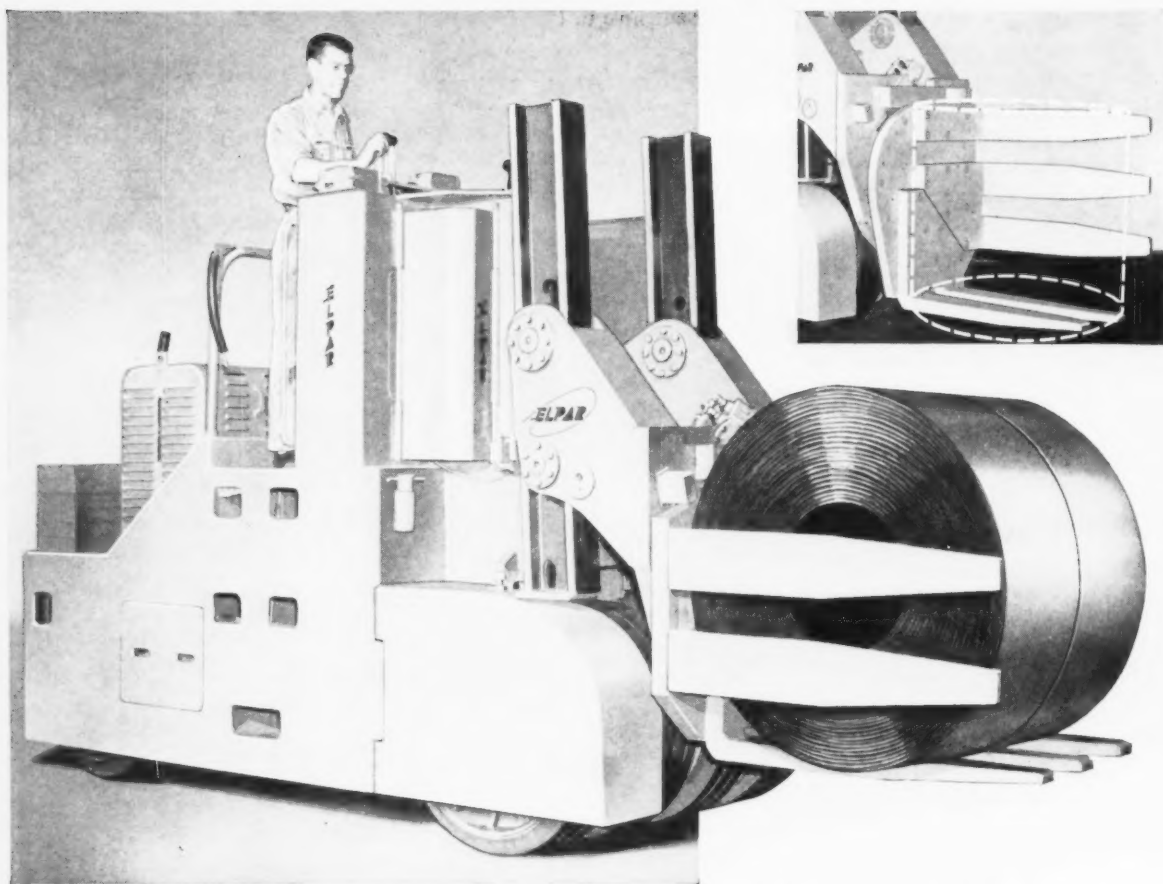
Please send me a copy of Dake Bulletin 330

Name

Company

Address

City  Zone  State



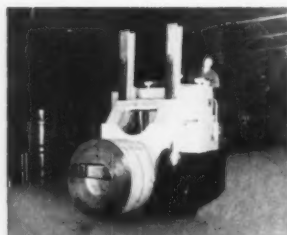
## New Twist in Coil Handling

Elwell-Parker engineers developed this ELPAR truck with rotating forks to solve a steel mill's coil transfer problems. Coils are stored horizontally and must be upended before they can be conveyed through the annealing furnace. The ELPAR truck does the job with effortless ease, setting the 10-ton coils down in exact position. After annealing, the truck again takes over, picking up and down-ending the treated coils for return to storage. This unit eliminates the need for a stationary upender. And, because of its mobility, the truck finds many other transporting-rotating uses throughout the plant.

Your handling problem may be quite different. Usually the solution will be a standard truck from the vast range of ELPAR models, some of which are illustrated below. Whether the truck is standard or special, you are assured of traditional ELPAR quality—quality that pays off in long years of dependable service with remarkably low operating and maintenance costs.

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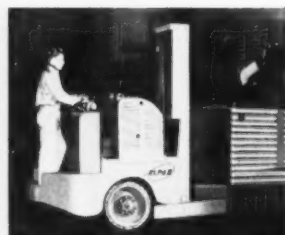
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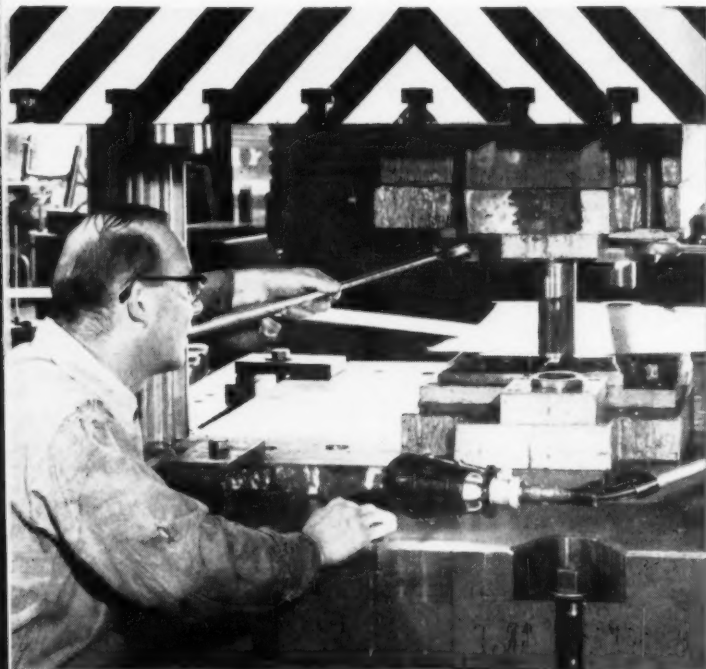
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# How To Get More For Your Metalworking Dollar

Number 9 of a series

## STAMPING

### IN THIS FEATURE

Stamped and drawn metal parts are essentially low-cost items. The reason is plain: They're synonymous with the mass-production techniques that are basic to our way of life.

And yet, inexpensive as they are, stamped parts and assemblies offer many opportunities for further cost reduction. Most of these challenges occur in the area of product design, which affects every phase of stamping operations.

No matter how efficient your present stamping designs are, they can probably be improved. Maybe they won't function any better, but you're still money ahead if they lead to savings in tooling or production.

Good design goes beyond contours that leave little or no stock waste. It extends to bending, hole punching, joining methods and many other considerations. Best of all, it keeps a tight grip on your stamping dollar every step of the way.

# Basic Design Rules: Your Keys to Impressive Savings

**Where do you start saving important stamping dollars? With presses? With shop labor?**

**You can do a lot in these areas, of course. But they come later, stamping design comes first.**

■ To get the most for your stamping dollar, invest it in the best possible stamping design. A well designed stamping assures you of two things: (1) it will function correctly in service; (2) it can be produced by the most efficient, economical stamping technique.

It's not enough just to make a metal stamping that does the job it's supposed to do. That's small satisfaction if it's an awkward and difficult part to produce; if you pay too high a price in excessive rejects, wasted stock and damaged dies.

So it's important for the product designer to know as much as possible about stamping techniques and die design. At the very least, he should draw freely from the experience of men who know presses and press tools.

**Follow These Steps**—These are the basic steps leading to the best possible stamping design:

1. Collect all possible information about the stamping or product in question.

2. Make a preliminary design.

3. Discuss the initial design with tooling and production experts.

4. Incorporate worthwhile suggestions into a revised design.

5. Prepare and test sample parts.

6. Make final design revisions if necessary.

There are many items of information the product designer must have before he can approach the stamping design job intelligently. He must know the function of the stamping; the quality that's required; the stresses to which it will be subjected, not only in use, but in production handling as well.

**Which Is It?**—It's also important to know whether the stamping is to be a component of some product, or an end item in itself, such as a key. Individual, independent stampings can often have more liberal tolerance limits than those which must be assembled with other parts.

If the stamping is to be a component part, what is its position and function with respect to other components? Is it stationary or movable? Does it receive other parts, either stationary, or ones that move with a turning or sliding action? If the stamping itself moves, is it in a straight line, circularly or irregularly?

**Keep Weight Down**—Next, limitations as to size, shape and weight of the stamping must be considered. It's well to remember that there are three ways, singly or in combination, to keep weight down and strength up: (1) use the light alloys;

(2) rigidize thin metals with ribs, flanges, bosses or other stamped-in elements; (3) perforate the stamping.

The material from which the stamping will be made must also be taken into account. Surface finish is important, too. It may have to be decorative, corrosion resistant, or both.

Other information to be gathered must include: useful life of the product; probable quantities required; possible cost limits of tooling, labor and material.

**Now, Your Pencil**—With all possible preliminary information at hand, an approximate stamping design is made in two or three views, possibly in working position, also.

At this point it's wise to consider whether some supplier makes a standard component that might fill the bill. Perhaps it can't be used as is, but a slight modification might turn the trick. Don't overlook this point. It's surprising how many things you can buy more economically than you can make them.

But if it seems best that you produce your own stamping, begin consulting the production experts as soon as you get your preliminary design on paper. They'll give you plenty of money-saving ideas to incorporate in your intermediate design.

**Always Try Samples**—When this task is complete, you're ready for

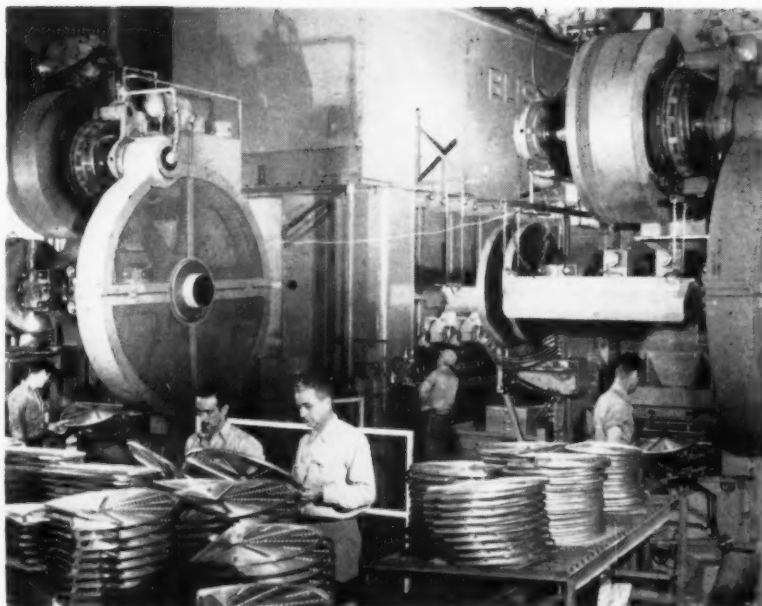


the sample-tryout stage. Don't attempt to build expensive press tools until you check handmade, small-scale samples to see whether your product design is sound.

If everything checks out, you can build your production tooling. Again make some samples, doing everything as you would in full production, but holding the blank size down. Too much material might ruin your new dies.

Your last step is to create the final, definitive stamping design. It should embody all the lessons learned up to this point, and require no tooling changes.

This may seem like a long, overly complicated design procedure. But it's difficult and dangerous to shorten it. The pages that follow will show you why careful, correct design is all-important where your stamping dollar is concerned.



**END OF THE LINE:** This setup typifies dollar-saving stamping. Refrigerator shelves transfer automatically from large stamping presses (rear) to twin embossing presses. (E. W. Bliss Co. photo)

## SECTION 2

# Flat Blanks Cut Tooling Cost

**If possible, make your stampings as flat pieces. They simplify tooling and production.**

**Flat blanks mean fewer rejects, too. And inspection doesn't get very complicated.**

■ The chief considerations in designing flat blanks are: (1) overall size, (2) minimum dimensions consistent with stock thickness, (3) external contour, (4) possible burr effects, (5) stamping effect on the walls of the blank, (6) lamination direction, (7) thickness variations.

**Try Simpler Ways**—Keep the overall size of stampings as small as possible. And before you decide that a large blank must be stamped, consider these alternatives: contour sawing, square shearing, composite

construction, or even changing the shape of the part altogether.

Because large blanks are usually short-run jobs, it's often practical to contour saw a stack of them in preference to buying expensive press tooling. However, if the blank outline is a combination of straight lines, with no recesses or slots, the squaring shear is your best bet.

Many times, also, it's better to make a composite stamping instead of a single large one. Savings in material and tools often more than compensate for the extra assembly involved.

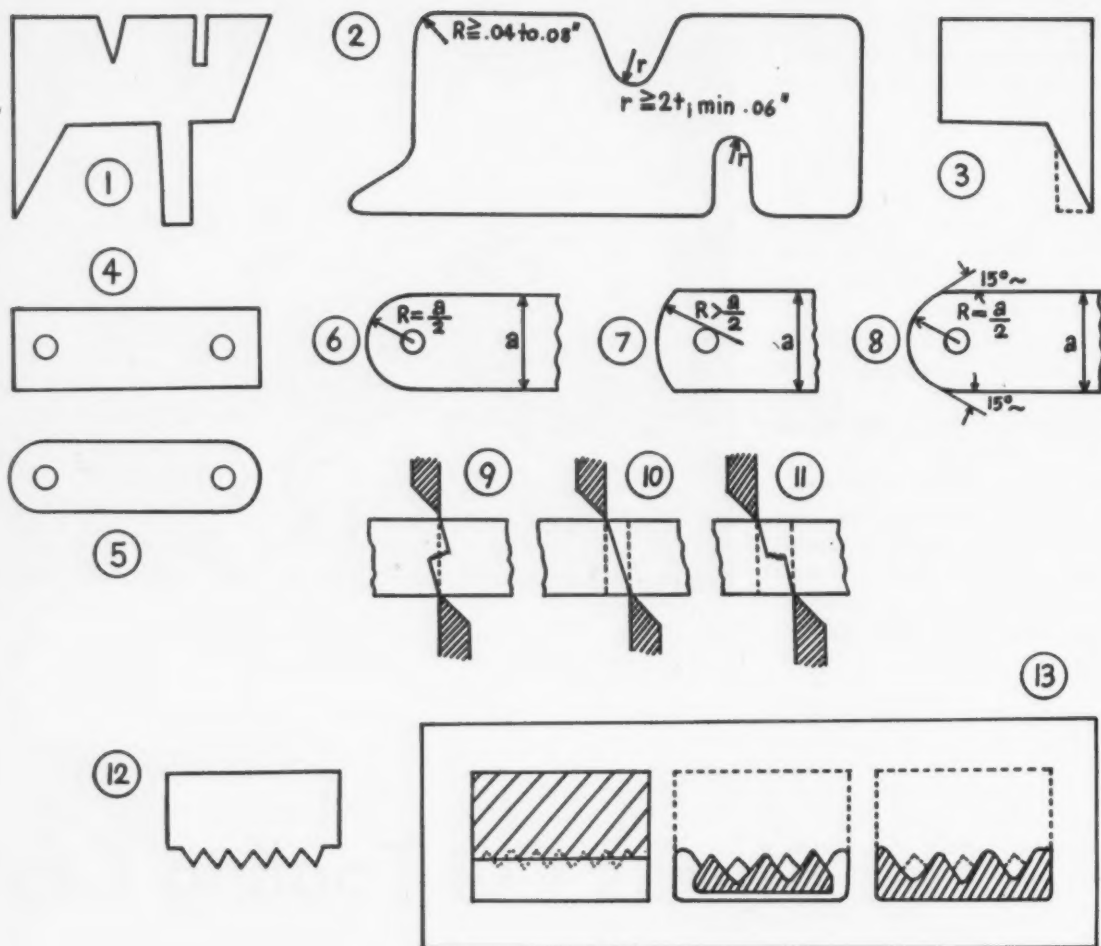
**Not Too Thin**—The minimum dimensions of blanks or portions of blanks must bear a certain relation to stock thickness. According to good practice, width of fingers or slots must be at least twice the stock thickness.

The basic rule for the outer shape of any blank is to keep it as simple as possible. The steel in blanking dies doesn't take much out of your stamping dollar, but the toolmaker's time does.

**Avoid Corners**—Then, too, simple die contours insure longer die life. Sharp corners, narrow slots and fingers wear rapidly, Fig. 1. Conversely, Fig. 2 shows a reasonable modification of blank shape that avoids troublesome contour details and prolongs die life.

Unfavorable cutting shapes also make die heat treatment more difficult, and reduce stock-utilization efficiency.

**Angled Slots Best**—Where slotting is necessary for any reason, a triangular shape with 60° angles is preferable to the parallel-sided



form. But the apex of the slot should be rounded with a radius at least twice the stock thickness to avoid corner cracks.

If sharp 90° corners are essential, first blank out an excess of material with rounded edges. Then trim this away in a secondary, corrective operation.

Acute angles also shorten die life very much. If they're indispensable, blank the piece as shown by the dotted lines in Fig. 3, and trim away the excess metal later.

**Watch Blank Ends** — Where stampings resemble chain links, try to have the ends represent shallow arcs of a large circle rather than perfect semicircles. The former design allows simpler punch construction and maintenance.

Where the stamping designer has considerable liberty in the choice of external contour, the round shape is preferable to an oval, square or irregular outline. Circular punches and dies are relatively easy to make and maintain.

But where the circular form is not practical, use the next simplest contour consistent with both the function of the stamping and its economical production.

**Shear it Straight**—A straight edge is always best for the ends of blanks that are sheared or otherwise cut off. The workpiece shown in Fig. 4 is preferable to that of Fig. 5.

But if there must be a rounded edge, don't simply specify a rounding radius corresponding to half the strip width, Fig. 6. The die is diffi-

cult to make, and any inaccuracy will detract from the appearance of the blank.

Figs. 7 and 8 illustrate two solutions to this problem: (1) a radius greater than half the strip width; (2) an incomplete semicircle leading in to the straight sides at about a 15° angle.

**You'll Get Burrs** — Die-blanked parts always have a slight burr on one side and slightly rounded edges on the other. If non-symmetrical stampings must move in conjunction with other parts, the designer should arrange for the burred sides to be out of the plane of action, if possible.

Another tip: if the flat blank is to be bent or formed in any way, keep the burred side on the inside of the

bend. There are two reasons for this: (1) the burred side is the weaker of the two; (2) the burr might scratch the female forming die.

**For Neater Edges** — Appearance of the side walls of blanks is often important. It varies with the clearance you provide between the blanking punch and the die plate opening. As in any shearing action, blanking causes fissures to originate at the top and bottom corners of the blanked edge. These tiny cracks occur at a slight angle to the shearing plane.

Lack of proper punch and die clearance produces the ragged edge effect shown in Fig. 9. Correct clearance (Fig. 10) causes the cracks to meet at the center of the blanked edge. Excessive clearance also causes a rough and unsatisfactory

edge, as shown in Fig. 11. Where a rough-edged effect cannot be allowed, make the blank larger and trim away the excess.

**How to Bend**—Orientation or lamination of the grain in strip or sheet material is important if flat blanks must be formed still further. Any bends you make should preferably be at right angles to this grain direction. But inclinations of 60°—even 45° in rare cases—are permissible.

Some thickness variation will usually occur at the edges of flat blanks. If this cannot be allowed, the blank must be made larger and trimmed back as required. This is rough on your stamping dollar, as are all such secondary trimming operations. Avoid them wherever you can.

**Some Extra Help**—A couple of

additional suggestions may help you to design and produce flat blanks more efficiently. For example, where slots must subsequently be trimmed, use the shortest possible line of cut.

Then too, progressive type dies can sometimes eliminate the need for an expensive single blanking tool.

**Avoid Sharp Teeth**—Now look at the sharp toothed blank shown in Fig. 12 which had to be made from 0.01-in. thick steel sheet. Even if a blanking tool could be made with such sharp points, they wouldn't last long. The solution is to make the toothed workpiece in two separate, overlapping operations with the three-station die of Fig. 13.

Cutting-off dies can often avoid costly production problems where there are corners and angles.

## SECTION 3

# Make Holes The Right Way

**Most stampings have holes. Their shapes are important. So is the way they're made.**

**Design them properly, make them the right way, and they won't drain off your dollars.**

■ It's quicker and cheaper to punch holes than it is to drill them. And if you have a choice, punch round ones. They're simpler than the oval, square or rectangular variety.

**Slots Are Handy** — However, elongated slots are frequently punched in stampings, and for good reasons. They allow you to use more liberal tolerances in bent and formed parts, and they're handy when certain adjustments are necessary.

Where you must punch multiple holes, and their relative locations are important, standardize on hole

shapes and sizes in every way you can. For one thing, standard-size punches are readily available as stock items.

**Flaunt Old Rules** — Punching tiny holes may run you into considerable expense in die maintenance. But you can successfully punch much smaller holes than is generally thought practical. The old rule that hole diameter must be no smaller than stock thickness is not necessarily true.

In mild steel sheet, for example, hole diameters can be less than stock thickness by these approximate percentages: 60 pct in No. 3 gage; 54.4 pct in No. 6; 39 pct in No. 15; 29 pct in No. 22; 18.5 pct in No. 30.

But there is a practical minimum when it comes to punching holes near each other, or near the edge of a blank. If a sheet is less than 1/8 in. thick, hole edges should be

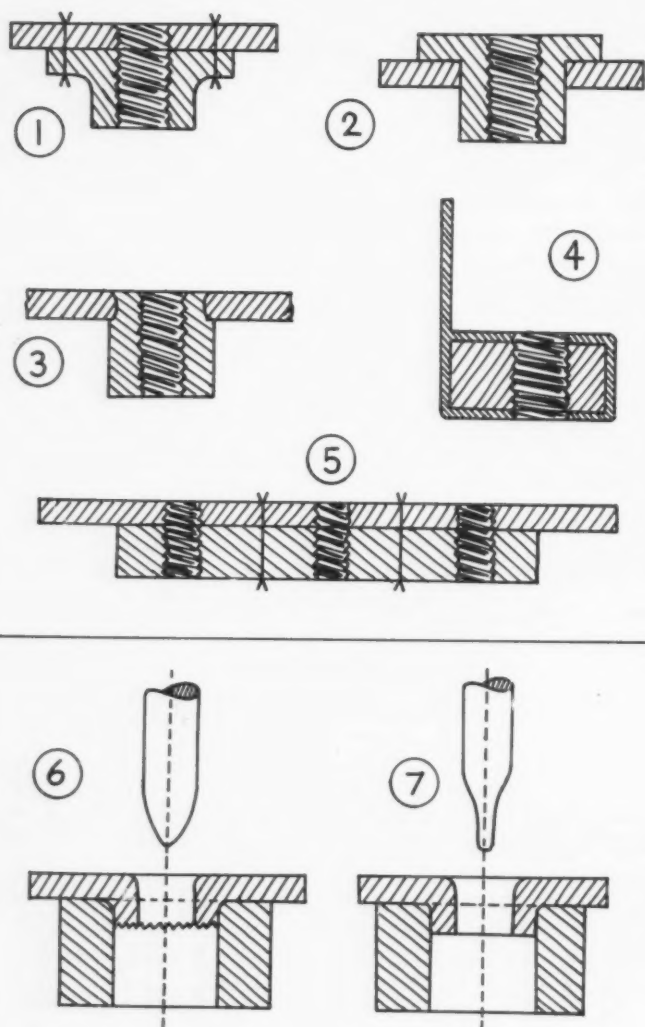
at least twice the stock thickness apart, or from a blank edge.

**Watch Edge Span** — Moreover, for round holes this edge-to-edge span should never be less than 0.12 in. For straight-sided holes the minimum is 0.18 in. When sheet is more than 1/8 in. thick, this spacing can be equal to stock thickness.

Here's another rule: Apart from metal thickness, there must be at least as much material around a hole as the radius of the hole itself.

Thus, ample spacing between holes is important for stamping strength. But even a span of twice the stock thickness between adjacent hole edges might still be too short for good die life. That's because a basic rule of die plate design says that minimum distance between two holes edges should equal the die-plate thickness.

**Punch It Twice**—The rules ap-



parently contradict each other, but there is a way to resolve the argument. Where the distance between hole edges must be less than die-plate thickness, simply punch the holes in two separate operations. It costs more to do this, of course.

For volume production of stampings that contain holes you can use: (1) separate dies for blanking and hole punching; (2) progressive type dies which first punch the holes and then stamp the blank contour around them; (3) compound dies which simultaneously stamp holes and blank the part.

**Lowest Tool Cost**—With sepa-

rate dies, your tooling cost is the lowest of all three methods, but labor cost is more than double. Accuracy is modest and the production rate is only a slow fraction of that attained with progressive and compound dies. Blank burrs and hole burrs can be on the same or opposite sides of the workpiece.

Progressive dies cost somewhat more than separate tooling. But they require minimum labor cost and yield fair accuracy plus a very high production rate. Blank and hole burrs are always on opposite sides.

**Get Top Accuracy**—Compound

dies have only one major disadvantage, their comparatively high cost. They yield perfect accuracy in hole location, lowest labor cost of the three techniques, and a bit faster production than progressive dies. Burrs are always on the same side of the workpiece.

Where fastening is to be done, threaded holes in stampings eliminate the need for separate nuts. In steel and brass, stock thickness for such holes should not be less than half the thread diameter. In softer metals, such as zinc and aluminum, stock thickness should be at least two-thirds the thread diameter.

**Make Them Thicker**—To satisfy this rule, it's often necessary to increase stock thickness. For example, ends of stampings can be bent double or triple. Sometimes it's better to weld, rivet, solder or stake another piece of sheet, a nut, or a section of threaded tubing to the stamping as shown in Figs. 1 through 5.

But you'll probably get the most for your stamping dollar by extruding or expanding holes to form bosses that can be tapped later. It's simplest and cheapest to pierce a hole as shown in Fig. 6, but it leaves a jagged edge. The flat-bottomed, double-diameter punch in Fig. 7 does a neater job.

Where sheet stock is very thin, it's usually best to punch and extrude in separate operations and from opposite sides. This keeps the burr on the low-stress side.

**When Metal Stretches**—Thickness of these bosses is always less than stock thickness because of a metal stretching effect. The OD of any thread that is to be applied later should be midway between the root diameter and the OD of the boss.

The height to which bosses can be stretched depends on the material used and its temper. Extra length can be obtained either through (1) a series of pre-draws followed by hole punching, or (2) after an annealing treatment. But remember that such operations are bound to raise your costs.



# Some Hints To Improve Your Bending Techniques

**Bending a stamping needn't put a bad kink in your stamping dollar, much less break it.**

**Design carefully for the simplest bends, and keep an eye on that all-important radius.**

■ Designing blanks which are to be bent involves a number of factors: (1) grain orientation in the sheet metal, (2) location of the burr on the blank edge, (3) bending radius, (4) length of the blank, (5) blank contour, (6) springback, (7) minimum height of legs or webs, (8) manner in which blanks are to nest.

This rule bears repeating here: Always bend at right angles (never less than  $45^\circ$ ) to the grain-orientation of the sheet stock. Sheet and strip material is strongest in a plane parallel to the rolling direction.

**Burrs Go Inside** — As for the burr at the edge of the blanked part, it should end up on the inside of any subsequent bend. Doing this makes the bent stamping stronger; it also avoids premature wear on the female die.

To a great extent, your dollar's worth in successful forming rides on the bending radius you use. Too small a radius stresses the bend to the point where it may rupture even under a minor load. A larger radius gives you a stronger, better looking bend. It also broadens your choice of materials for making the stampings.

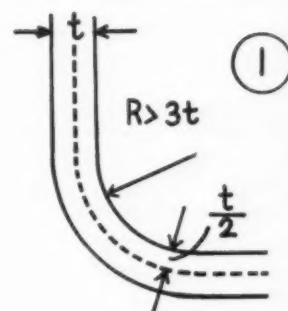
**Bends By Trial**—For a particular stamping design and material, you can only determine optimum bend-

ing radius by practical trial. If the stamping must have absolutely square corners, it must first be bent with a radius and then sharpened in a second squaring die. This technique only works well with soft metals. Even so, it's costly.

Calculating the correct length of a flat blank which is to be bent is another difficult problem. The length you start with may change because blanks (especially narrow ones) stretch somewhat in the bending zone. You'll have to experiment to find the length you need.

However, where the rounding radius is several times stock thickness, the stretch factor is negligible. In such cases, correct starting-blank length will correspond to the geometrical center of the bent component, Fig. 1.

**Right Angle Best**—It's also important to have the blank contour line form a  $90^\circ$  angle with the bending line so that less stress will be imposed on the metal. Thus the inclined lines in Fig. 2 must be altered to square them off with the bending line as shown in Fig. 3. Dimension "a" in Fig. 3 should

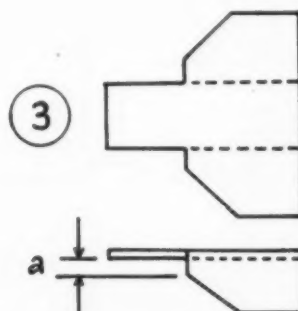
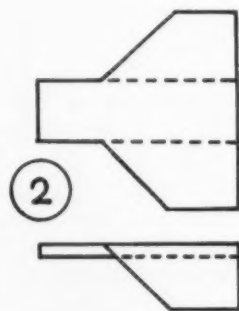


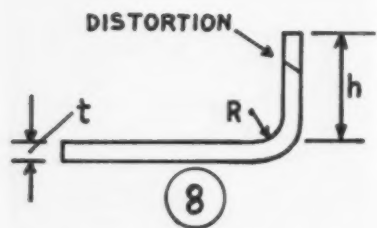
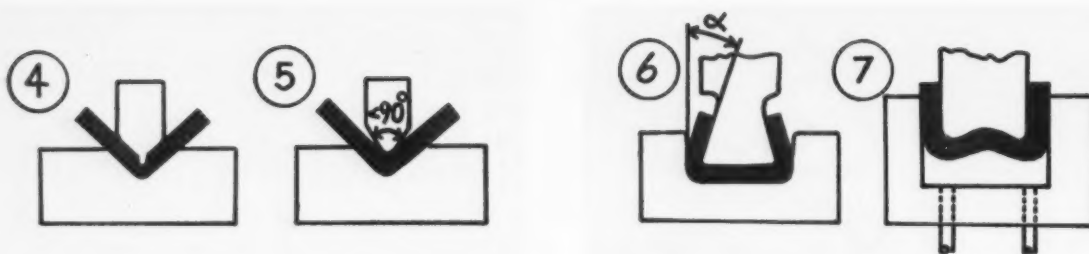
be at least two to four times the stock thickness, and never less than 0.125 in.

Because of springback, any bent stamping will have a larger bending angle than the tool that produced it. Springback is affected by many factors, and is unpredictable.

**Check Springback** — Springback can be compensated for by (1) over-bending; (2) restriking; (3) using special dies; (4) heating the stock. Overbending is the simplest and most widely used method. The difference between the tool angle and the required bending angle must equal the springback angle.

Re-striking stampings in a second





operation may be necessary when (1) the bending angle must be held to close tolerance, and (2) the springback phenomenon is difficult to control.

There are several methods for bottoming workpieces in the bending zone to "set" the metal firmly. Fig. 4 shows the use of a punch with a formed projection. In Fig. 5, the punch has a smaller angle than the die and a radius is machined at the root of the die opening. This coins the work slightly in the bend zone.

**Heat Boosts Cost** — Heating blanks before bending them will also reduce springback, but it is

slow, expensive work. And unless heating is carefully controlled, bend angles will vary widely.

In overforming to control the springback of "U" bends, the punch must be undercut at each side, Fig. 6. The angle shown must be about 20 pct more than the springback angle. Special dies sometimes use pressure pads to arch the base of the "U" so it will straighten when it comes out of the die, Fig. 7.

For all cases of "U" bends, clearance between die components should be exactly equal to stock thickness. This holds springback to a minimum.

**Keep Legs Long**—To avoid an edge taper effect on the ends of legs or flanges in square-bent components, the minimum leg height ("h" in Fig. 8) must be two to four times stock thickness. In no case should the length be less than 0.1 in. for thin material and 0.125 in. for thick stock.

However, if a leg or web must be shorter than the recommended value, it should first be made longer

and then trimmed off square to the required height. This cures the distorted effect where the outside surface of the leg is shorter than the inside surface as indicated in Fig. 8.

**Plan Nests Early**—The manner of nesting a stamping for a bending operation must be determined when the stamping is designed. A simple nest need only touch a symmetrical blank at a few strategic points around the periphery to locate it properly.

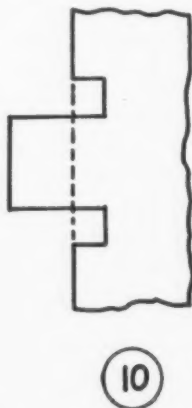
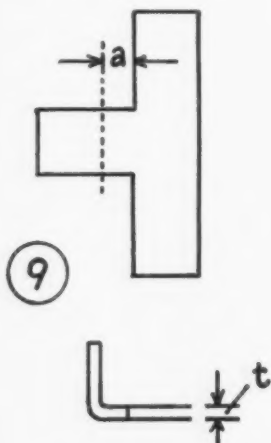
Stampings that require several bends are nested with dowel pins that fit previously punched holes. These holes must always be in the section that remains flat after forming, and they must not be too near the bending zone.

Another tip: If the legs formed in bending a "U" cannot be of the same length, use an extra pilot hole to maintain accuracy of the bend lines.

Take care in nesting symmetrical stampings to avoid getting the burr on the outside of a bend. You can do a foolproof nesting job by making the parts non-symmetrical. One way is to punch special holes that only fit certain alignment pins. Or, a corner of the blank can be trimmed away.

**Your Dollar, Again** — Special problems involving partial bending, lancing, louvering and combined or compound operations occur frequently. Handling them in the correct way can get you much more for your stamping dollar.

For example, a bend line that coincides with the blank contour is wrong. It leads to all sorts of trouble. If you can, move the bend



line away as shown in Fig. 9. But if you can't, punch some slots as shown in Fig. 99. Narrow slots and triangular ones are wrong; die construction and maintenance is difficult and costly.

**Fewer Bends, Please** — Making more than two bends in a stamping is always hard on your stamping dollar. You either have to make the bends in separate operations (at high labor cost), or use expensive compound bending dies. Try to avoid multiple bends or, at least try to make them in one press stroke.

Locating holes in bent stampings is tricky; those that are too near the bending line will be deformed by the bending operation. The edge of a hole nearest the bending line should be at least twice the stock thickness from the center of the inside bend radius.

**Don't Handle Twice** — If it's essential to have undistorted holes nearer to the bending line, they can be punched after bending is complete. But this involves the old bugaboo of expensive second-operation work.

Where there is enough space in the bending zone, try punching a small hole in the bending line itself. This hole will distort, but the ones you're interested in will remain virtually unaltered in shape and location.

**Use Oblong Holes**—Where you can't punch an auxiliary hole in the bending line, make your nearby holes slightly oblong. The bending operation will distort them to near-round forms. Trial and error will show you just what sizes and shapes these oblongs should be for the best distortion effect.

Punched holes and slots also relieve stresses in flanged and lanced components. Width and depth of these notches should be about twice the stock thickness, or at least 0.03125 in.

These remedies can often save you money, but you won't want to depend on them to yield perfect accuracy in the finished product. If you're doing precision work on these bent parts, you'll probably have to punch the holes after all the bending has been done.

**Here's A Thought**—But before you let yourself in for this extra expense, give some thought to joining separate stampings instead of making a single, compound-bent workpiece. Riveting or welding a couple of single pieces together may be much cheaper in the long run than making multiple bends with a lot of complex tooling.

## SECTION 5

# Drawn Parts Need Good Design

**There are good and bad ways to draw cups, shells, boxes and other shapes.**

**You don't want the bad ways, or those that are too elaborate. Here are the right methods.**

■ Designing parts that are to be drawn into cups, shells, boxes or other shapes is considerably different than designing flat stampings or parts with simple bends. For one thing, you're playing for higher stakes with your stamping dollars.

It's a difficult task to come up with the most favorable design for a drawn component. The designer should have a broad knowledge of tooling and press operations as well as an understanding of plastic flow in metals.

**Keep Trying**—To some extent,

the use of handbook formulas can help in calculating blank sizes for symmetrical shells of round, elliptical, square or rectangular cross section. But even with formula guides, some experimental work is usually required to get everything nailed down for economical mass production.

The following hints may help you to get more for your "drawing" dollar.

Some rounding always occurs at the bottom of drawn shells. Similarly, there is a rounding effect where a flange angles away from the wall of a shell. If it's necessary to square off these corners, draw the shells in the usual way first. Then sharpen the corners in a second operation with a separate squaring die.

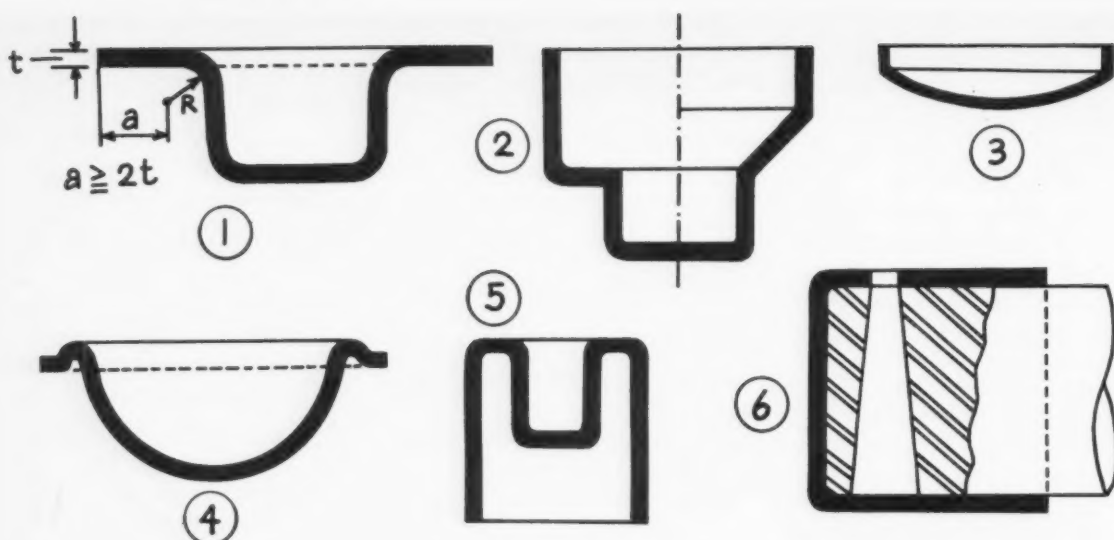
**Need Extra Length**—The squaring process shortens the shell some-

what, so you'll have to provide a little extra length to start with. Flanges will have a somewhat irregular outline also, and will need trimming for true roundness.

Minimum width of flanges in drawn parts should be not less than twice the stock thickness, measured from the center of the rounding radius, Fig. 1. Where a sharp edge is not objectionable, the width can be less. Or the flange can be eliminated by turning it upward in still another operation after trimming.

**Watch Your Sizes**—Where shells have two diameters, keep the difference between these dimensions as small as possible. Also, make the transition from one diameter to another by means of a smooth taper of about 45°; this corresponds to the standard form of redrawing dies.

The right side of Fig. 2 illustrates



the principle; the left side of the sketch is the expensive way, requiring an extra sizing operation.

Bear in mind that a cylindrical form is always easiest and cheapest to produce. Whenever a tapered, curvilinear or hemispherical drawn component is proposed, see if it can't be switched to a cylindrical form.

**For Shallow Dishes** — Shallow concave pieces are also difficult to produce, and their feather edges may make them somewhat dangerous to handle. It's better if you can alter the design to include a small vertical wall section, as shown in Fig. 3.

Take tool construction into account in drawing flanged, semi-spherical shapes. For example, the beaded flange shown in Fig. 4 improves blank holding conditions and is preferable to a flat flange.

And don't overlook what reverse drawing can do in the production of

some components. Fig. 5 shows a shell form which is handled easily in this way. With standard drawing techniques the job would be difficult and expensive.

**Holes In Shells**—If holes must be punched in the walls of drawn shells, provide ample distance between the hole edge and the bottom of the shell. This insures that the mandrel die will have sufficient strength. Fig. 6.

Quite often right and left hand parts have irregular shapes which make them difficult to produce separately. The solution may be to draw the two components as one piece, separating them later with a simple slitting die.

The same principle can apply to the production of parts similar to the one shown in Fig. 7. It has a flange which makes drawing the individual part a difficult and expensive job. But by drawing three of these parts at once (Fig. 8) sym-

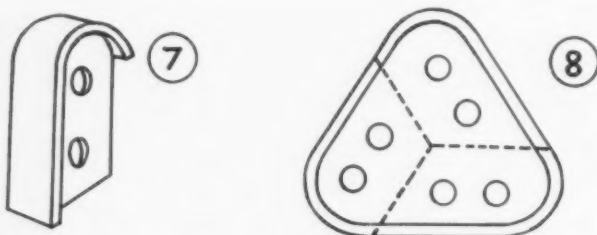
metry is established and the problem is solved with ease.

**Not Too Eager**—Mostly, however, totally irregular parts require a lot of trial-and-error work before the optimum shape and dimension of everything involved is perfect to the last detail. You may be able to do the job, but bear these two cost factors in mind: (1) the skilled personnel who do the experimenting; (2) the unavoidable waste in most irregular shapes.

Another hint concerns the assembly of two drawn components, one inside the other. Keep the external rounding radius of the inside shell larger than the internal radius of the outer shell. This insures a more perfect assembly because the two pieces are not joined at the corners alone.

Despite all that you can do to improve the design of drawn components, the technique is still costly so far as tooling is concerned. Unless you can set up to draw a large volume of parts, you might find it better to resort to some other process.

After all, there are cases where the best way to save stamping dollars is to not spend them in the first place. Before you make any quick decisions about drawing short-run items, consider what you might be able to do with spinning, casting, composite construction or some other method.





# How to Emboss and Curl

**Stamping often involves a number of operations that are thought of as minor, if at all.**

**Yet, any techniques that save you money are important. Embossing and curling are two of these.**

■ Embossing frequently comes in for a share of your stamping dollar. For one thing, embossed designs can add a decorative touch to stamped parts. In other cases, embossed letters or figures can be used as nameplates, to list part numbers or even to provide useful information or instructions to the user.

Embossed ribs or beads are excellent for reinforcing flat or formed pieces of sheet metal. Then, too, embossed threads in thin metal shells are used extensively for fastening, as with light bulbs and small metal containers.

**Need Ductility** — Because embossing is a metal-stretching operation, you can only apply it to metals with comparatively high ductility. Here are some other things you should be mindful of:

(1) An embossed section should always be streamlined, with well-rounded edges, Fig. 1. Avoid any abrupt changes of form.

(2) Depth of ridges is best kept as low as possible. This avoids over-stretching and work hardening the metal.

(3) Configurations of the embossing stamp will have different dimensions than the cavities of the matching section.

(4) Shells to be embossed with a thread usually have a diameter corresponding to the pitch diameter of the thread. Thus half of the thread is formed by pushing metal in, and half is formed by expanding metal in the shell wall.

**Curling Widely Used**—Curling techniques which roll over the ends of hollow or flat workpieces are also important in stamping operations. The purpose may be to (1) increase the strength of the part, (2) offer protection against sharp edges, (3) assemble two or more separate parts.

"Closed" curling forms a ring around the open ends of hollow shells. The curl itself is usually made in an outward direction, and it's important to keep the burr on the inside. Moreover, if the part is to be plated, do it before the curling operation; it's not easy to get corrosive plating solutions out afterward.

**Adds Strength**—A double curl, Fig. 2, is often an effective way to reinforce very thin metals. It's done with standard tools, but with a longer stroke of the press ram. For extra strength, insert a wire core. Fig. 3 shows an extruded boss in one stamping curled upon another part for assembly purposes.

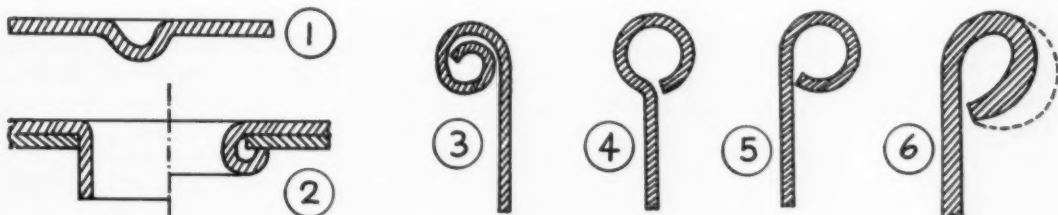
Closed curling is best done with ductile stock, under 0.04 in. thick. And the minimum diameter of workpieces to receive a closed curling treatment should be 25 to 30 times the stock thickness.

"Flat" curling is similar to the closed process except that the curl is straight and open at both ends. Here too, it's important to keep the burr on the inside and to do all plating beforehand. Since the process is essentially one of bending, it should also be done at right angles to the direction of flow lines in the sheet.

**Fancy Curls**—The coaxial flat curl shown in Fig. 4 can only be made after a preliminary forming operation. Thus it costs more to make than the tangential flat curl in Fig. 5. Minimum internal diameter of a flat curl is governed by stock ductility and ranges from 1.5 to 2 times the stock thickness.

A flat curl never has an ideal circular shape, as indicated by the dotted line in Fig. 6. The deformation is more pronounced with thick stock and small curl diameters. A more nearly round curl can be formed over a mandrel.

To calculate the approximate length of flat section you'll use to form a curl, add the diameter of the proposed curl to the thickness of the stock you're going to use and multiply the sum of these two quantities by 3.1416.



# Stamp More Parts From the Stock You Buy

**As a stamper, most of your dollars go to buy sheet or strip stock. The cost adds up fast.**

**Your goal must be: To use every bit of raw material you can to make quality stampings.**

There are several ways, either separately or combined, to push your "material utilization factor" closer to the 100 pct mark: (1) better stamping designs that conserve stock; (2) composite construction; (3) use of thinner metal reinforced in various ways; (4) more standardization in the materials you use.

**Layout Is Key**—More efficient

strip layout should be near the top of your dollar-saving tip sheet. Take the case of an "L"-shaped blank. The primitive layout of Fig. 1 will work, but with an efficiency factor of only 50 pct. Fig. 2 is best, yielding 91.3 pct utilization efficiency in a so-called "scrapless" design.

A maximum-use factor is not always the key point, however. Close tolerances sometimes prevent use of scrapless layouts. Grain orientation, too, affects some arrangements. And in some cases, it may cost more to buy exact-width stock than the saving is worth.

**Follow the Rules**—In general, however, certain rules can be ap-

plied to strip layouts. About 95 pct of actual production stampings can be classified in basic patterns.

For example, the layout of Fig. 3 wastes more than half of the stock in producing simple circular blanks. By increasing strip width slightly (Fig. 4) and staggering the circles, efficiency goes up sharply. In practice, four or five rows will give you the best results.

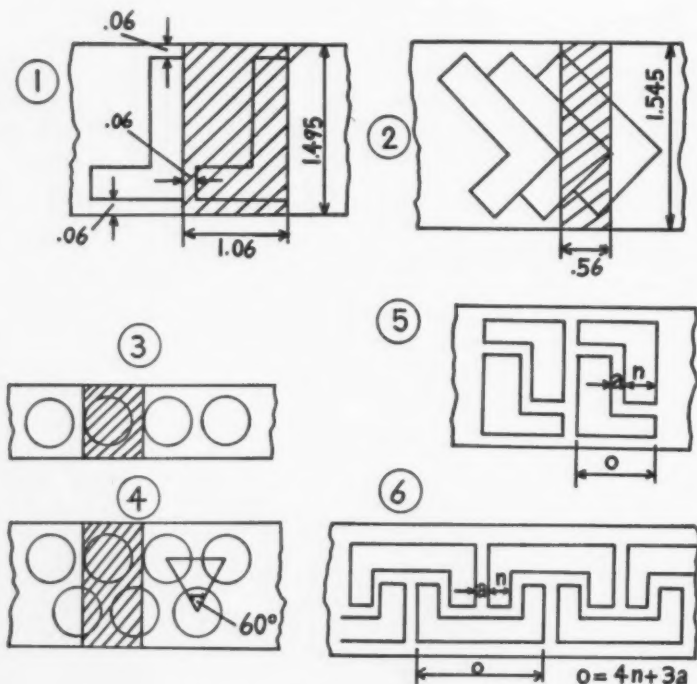
Rectangular blanks are best laid out with short sides parallel to the strip edges. This provides not only for minimum stock waste, but also for a shorter center-to-center distance between blanks which speeds production.

**Two More Methods**—Parallelograms are laid out similarly to rectangular blanks, with short sides parallel to the strip edges. Blanks in the shape of trapezoids should be alternated for minimum waste of material.

L-shaped components can be inclined with respect to the strip axis. In some cases, they can be alternately reversed for better material utilization, Fig. 5. However, width of the blank ( $o$ ) must be equal to twice the leg width ( $n$ ) plus the scrap allowance, ( $a$ ).

T-shaped parts must always be alternately reversed for best stock utilization. Again, blank length should be equal to twice the leg width plus the scrap allowance. Sometimes an inclined layout will be more efficient with this alternately reversed pattern.

U-shaped blanks are also reversed for best efficiency, as shown in Fig. 6. Such stampings are ideally proportioned when blank length ( $o$ ) equals four times the leg



width (n) plus three times the scrap allowance (a).

**Odd Shapes Tough**—Irregular blank shapes can also be laid out rather efficiently according to one of the foregoing patterns. However, such parts place a premium on design ingenuity to achieve maximum stock utilization.

Oblong components can be produced with a simple and inexpensive tool that cuts parts to the required shape and length and also perforates them. Strip width and part width are the same. The only waste is that represented by the width of the cutting-off punch, which should equal twice the stock thickness.

Where the ends of parts have matching shapes, a shearing die can produce them with no waste at all.

**Small Slug Waste**—Virtually scrapless production is also possible with square and rectangular pieces; for example, square nuts. In such cases, the only scrap is the slugs punched out of the holes.

In almost every case, except for round and rectangular blanks, some extra stock is needed for the first and last blank in any strip. Thus coiled material is preferable to individual strips because there is only one starting and finishing end for a large number of stampings.

Coils offer other advantages as well. They cost 15 to 20 pct less, on an average, than strip sheared from sheet stock. And automatic coil-feeding devices reduce handling costs and boost production.

**Get Exact Width**—Moreover you can buy coils in the exact width you require. This avoids the waste that

often results when strips are sheared from sheet stock; sheet width is rarely an even multiple of the strip width you need.

Also about waste, keep an eye open for ways to use the slugs punched out of holes or other apertures. These pieces can often be converted into smaller stampings.

**Just Common Sense**—For example, where holes are punched in large stampings simply to lighten them, prudence dictates slugs that have the necessary contours to form useful stampings.

Occasionally it may pay to buy large blanks rather than make them yourself. Especially if you need disks 6 to 8 in. in diam, and in quantities of 10,000 or more. An outside source may be able to supply these quickly, saving you tooling and scrap handling costs.

## SECTION 8

# Ribs and Beads Save Weight

**Because material cost is such a big item, try to use thinner stock wherever you can.**

**But watch out for one thing. Unless you're careful, thin stock can make stampings too weak.**

■ You can avoid this loss by using certain reinforcing techniques. They call for extra operations, to be sure. But the material savings they achieve more than compensate for the extra time and effort they require.

**Use Patterned Dies**—For example, large, thin blanks of hard or medium-hard cold rolled steel tend to warp. But a pointed, patterned rigidizing die will both straighten and strengthen such blanks. Fig. 1 shows a typical rigidizing pattern.

Distance between any two adja-

cent points (p) in such a pattern, Fig. 2, should be about 1.0 to 1.5 times the stock thickness (t). The included angle that makes up the forming points of rigidizing dies is usually about 60°, although it can be increased to 90°.

**Avoid Sharp Points**—To prevent tearing the blanks in the rigidizing operation, the die points should be ground slightly, leaving a flat surface between 0.001 and 0.002 sq in. on each one. Where stampings will be stressed severely, it's better to round off the die points. However, the rigidizing operation must not stress the metal anywhere near its ultimate strength.

Resistance to bending in a flat blank can also be increased considerably by flanging one side of the piece. Still more strength can be added by flanging opposite sides of

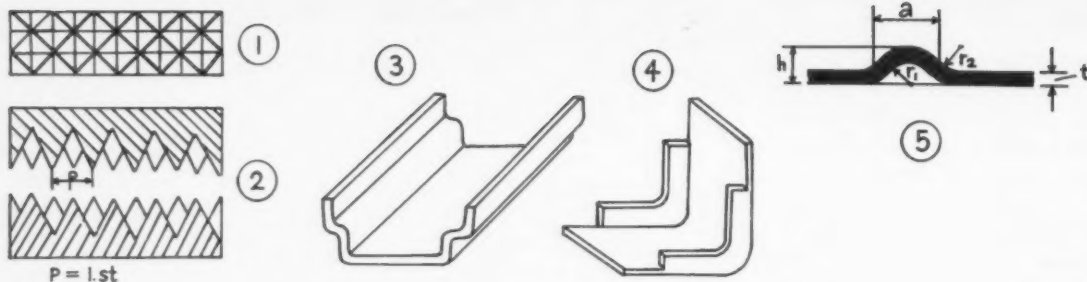
the blank to form either a straight "U," or a jogged "U," Fig. 3. Such flanges will also improve the strength of bent sections, Fig. 4.

**Ribs and Beads**—Another efficient way to improve the strength of thin stampings is by using embossed ribs or beads. These are narrow troughs or ridges of uniform width.

They may be the open type, extending from one edge of a flat blank to the other. Or they may be closed ("blind") beads covering limited areas of the blank surface which taper off to round or pointed ends.

One variation is the semi-closed bead which is open at the edge of the blank and tapers to a close as it moves in toward the center of the part. Closed and semi-closed beads are more effective stiffeners than open-end ribs.

**Bead Flanges, Too**—Both circu-



lar and longitudinal beads are used to stiffen cylindrical and tapered shells. Box bottoms are often ribbed for extra strength, also. And although flanging is a reinforcing process in itself, flanges are frequently beaded for added firmness.

Generally, high, narrow ribs and beads provide more firmness than wide, low ones. But the danger in trying to make a bead too high and

too narrow is that the metal might rupture.

As in most stamping operations, metal thickness is a key factor in plotting dimensions for reinforcing ribs and beads. The following dimensional limits are reliable, and symbols apply to those dimensions shown in Fig. 5: (1)  $r_1$ : 1t to 4t; (2)  $r_2$ : 2t to 5t; (3) a: 4t to 8t; (4) h: 2t to 5t.

In addition, for closed and semi-closed beads the inside radius in a longitudinal direction should equal half the bead width. Outside radius in the same direction should be twice the stock thickness for best results. Moreover, the end of a closed bead should be no nearer the blank edge than a distance equal to at least 20 times the stock thickness.

## SECTION 9

# Choose Joining Methods Wisely

**Joining, applied to stampings, covers a lot of territory. For most jobs the choice is broad.**

**Here's a rundown on the various techniques, and worthwhile tips on how to use them.**

- The three principal joining techniques use (1) mechanical fasteners: such as rivets, screws and staples; (2) presses: to perform such operations as staking, curling and flanging; (3) heat: to accomplish soldering, welding or brazing.

**Three Basic Unions**—The actual joints that apply to stampings can be further classified into three basic types: (1) permanent, (2) semi-permanent, and (3) temporary.

In some cases, to satisfy rigid service requirements, the designer may have no choice but to use a

welded joint. But in other cases the choice is not so well defined; here is where your decision can get you much more, or much less, for your stamping dollar.

**Joints That Last**—Permanent joining methods make use of: (1) riveting, (2) soldering, (3) brazing, (4) welding, (5) staking, (6) pressing, (7) flat curling, (8) flanging, (9) round curling, (10) seaming, (11) crimping, (12) penetrating, (13) stitching and stapling, (14) embedding, (15) adhesives.

Riveting is one of the most important techniques for joining metal stampings. Of the many types of rivets, the tubular form is one of the most convenient. It requires much less pressure than the ordinary, solid type. For this reason, you'll find it excellent for joining stampings to non-metallic materials.

**Thick and Thin**—Where you're riveting two metal sheets of different thicknesses, locate the rivet head on the side of the thin sheet. Thus, when you upset the shank, you'll do it against the thicker, stronger material.

Flush riveting looks well, but it's much more difficult and expensive than the conventional way. If it's essential that surfaces appear absolutely flat, you can:

(1) Use common rivets and emboss the stamping the required amount.

(2) If the metal is thick enough, countersink the stamping and head the rivet over accordingly.

(3) If the thinner stamping of an assembled pair must have the smooth appearance, dimple it and countersink the thicker one, Fig. 1.

**Alignment Tips**—It's virtually



impossible to align riveted parts with a high degree of accuracy. But you'll do the best possible job if you extrude a boss in one of the stampings and make a stepped, two-diameter hole in the other. The larger diameter of the stepped hole takes the boss; the smaller accommodates the rivet shank.

Although soldering is classed as a permanent joining method, it doesn't provide the strength you can get with welded or brazed unions. But even where brazed joints are used, it's best to apply the brazing metal to rather large areas.

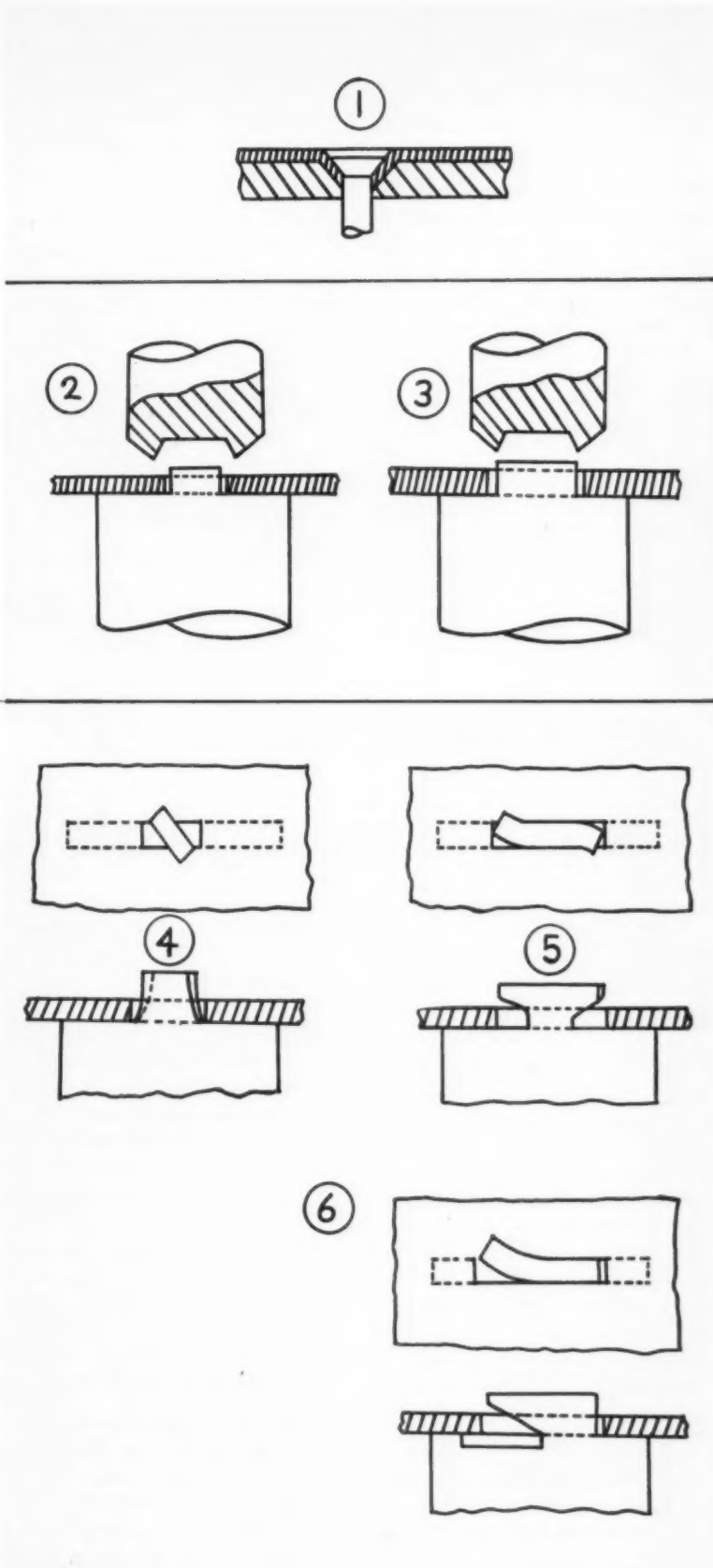
**Try Spot Welds**—Spot welding by the resistance method is also widely used for joining metal stampings permanently. It's fast, and the parts to be united do not have to be punched, pierced or drilled. For light service, you may prefer spot welding to riveting.

Staking consists of locking two parts together permanently by expanding metal to (1) squeeze it around a shaft in a hole, Fig. 2; or (2) spread out a shaft so that it binds more tightly in a hole, Fig. 3. In general, staking is done at only a few peripheral points by sharp, chisel-like blows.

Crimping is rather widely used as a permanent joining method for thin-walled stampings between 0.03 in. and 0.10 in. thick. Essentially it pinches in the end of a shell or the side of a blank to grip some other workpiece. One of the most familiar applications is that of joining cartridge cases and bullet slugs.

**Anchor In Plastic**—Embedding is an interesting permanent-union technique often applied to anchor stampings in plastic molded parts. Liquid plastic is poured to surround portions of a stamping. When it solidifies and contracts it imprisons the metal part firmly.

Joining stampings permanently by means of adhesives is another fast growing technique. Some processes require heat; others are done at room temperature. The possible benefits of these methods are worth



Continued on P. 112

investigating in your drive to get the most for your stamping dollar.

**More Good Ways**—Stampings can be joined semi-permanently by any of the following devices or techniques: (1) screws; (2) clips; (3) dowel, pivot or cotter pins; (4) wedges; (5) bending; (6) inserting; (7) staking; (8) lock-joining.

Screws are widely used for both semi-permanent and temporary joining. However, they are an expensive way to do a job, and they can increase the weight of the end product appreciably.

If an assembly requires several screws, all of the tapped holes should be in one workpiece and all of the clearance holes in the adjoining part. For light-duty assemblies, use self-tapping screws,

and keep the burr side of punched holes away from the screw heads.

**Clips On Shafts**—For other light-duty jobs, stampings can be fastened to unthreaded shafts or studs by means of special clips. Certain types will hold securely on the smooth shaft itself; others, in the form of retaining rings, must be fitted into suitable grooves in the shaft.

Other semi-permanent techniques use dowel pins both for locking and aligning stampings. Tapered pins are preferred for applications where the joined parts may have to be separated quickly. Loose cotter pins are often used for similar purposes.

**Bending Is Fast**—Bending, which includes folding, wrapping, clinching and strapping, is a popular press-assembly technique. No

screws, rivets or auxiliary devices are required.

Assembly by folding or bending consists essentially of trimming a lug or tab in one workpiece, and a matching narrow, but loose-fitting slot in another component. The tab is inserted in the slot and bent back upon itself 180°.

**Try Round Holes**—The best shape for tab ends is either half-round, tapered, or square with cut corners. These designs can be inserted into slots more easily than square-ended tabs.

Where the locking action must be extra firm, or when you're using heavy or hard stock, tabs can be twisted instead of bent or folded. Figs. 4. shows one of the simplest designs. Figs. 5 and 6 are more expensive, but they provide extra locking strength through a wedge effect.

## SECTION 10

# Keep Stamping Tolerances Broad

**Being too fussily tight about stamping tolerances can cost you money and produce no real benefits. Here's why.**

■ The problem of what to do about stamping tolerances is not an easy one to solve. Some specifications simply note, "highest precision," which is meaningless. Others state, "all dimensions  $\pm 0.001$  in.," which may be meaningless also, except when it shortens the life expectancy of your stamping dollar.

Unfortunately there are no formulas, rules or standards for fixing stamping tolerances. The final decision must be based on the product designer's judgment, knowledge and experience.

**Not Too Tight**—The usual tendency is to go overboard on the side of tolerances that are too tight to be practical. To counteract this, make

all tolerances as liberal as possible in view of the function of the part and its assembly method.

Actually, in many cases you needn't bother to specify tolerances at all. Many stampings which are products in themselves (keys, flat wrenches, can openers and the like) can be produced with realistic accuracy and economy when major dimensions are noted without tolerance leeway.

The same holds true for many holes in stamped parts. There is no need to be fussy about "thousandths" when you're making oil holes, air duct openings, or apertures to decrease over-all weight.

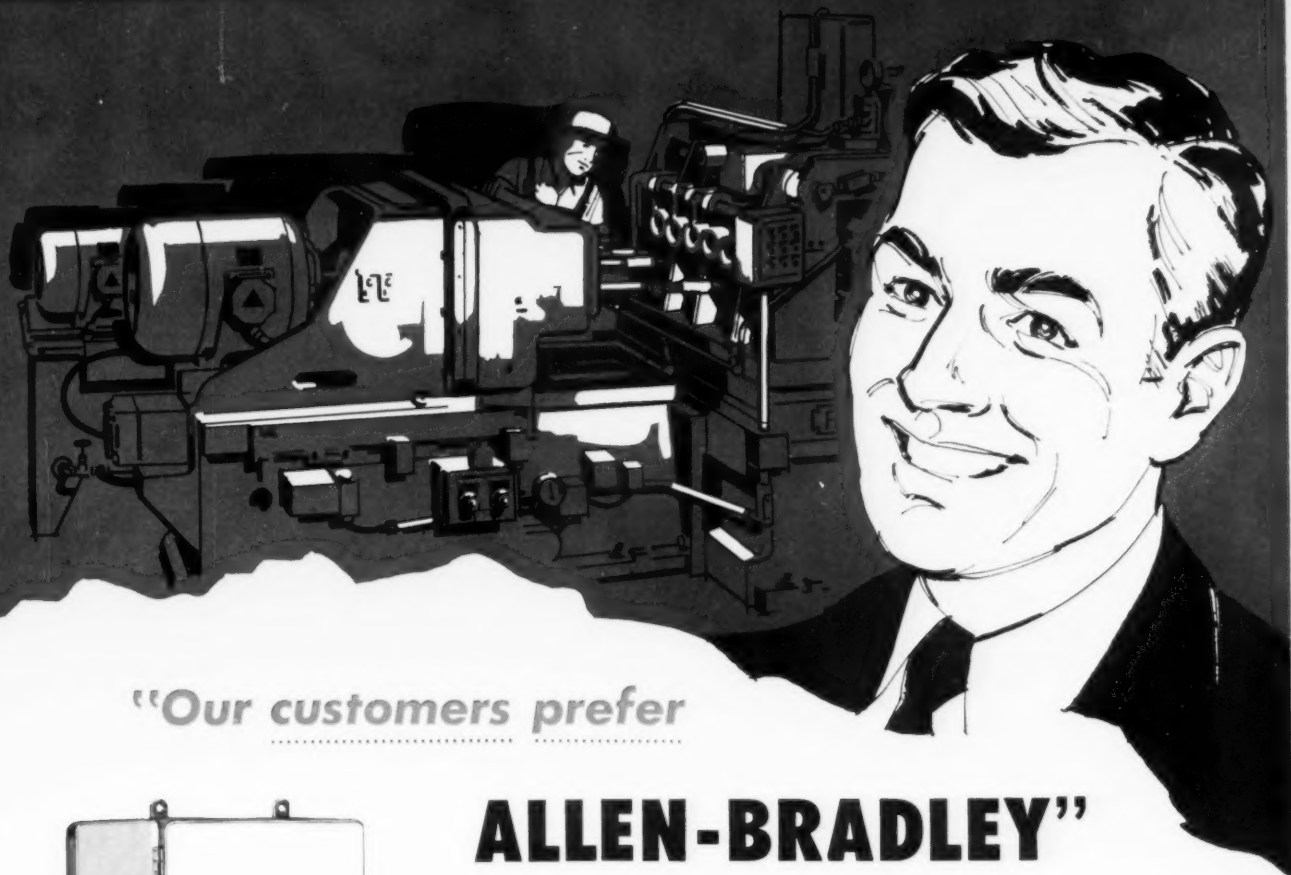
**Use Right Distances**—However, where you must keep dimensions within certain limits, make sure the distances apply to proper points.

For example, if the distance of a hole center from the edge of a bent

stamping must be held to an exact value, specify the dimension from the inside of the bent leg, not the outside. By so doing, variations in stock thickness will not affect hole location.

Also consider the effect of tool wear as it occurs in normal production. You can minimize harmful results if the brand new dies make blanks on the small side of the tolerance limit. Thus, as normal wear enlarges the die plate opening, blanks will still be acceptable until they reach the top tolerance limit.

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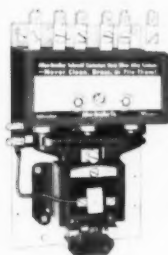
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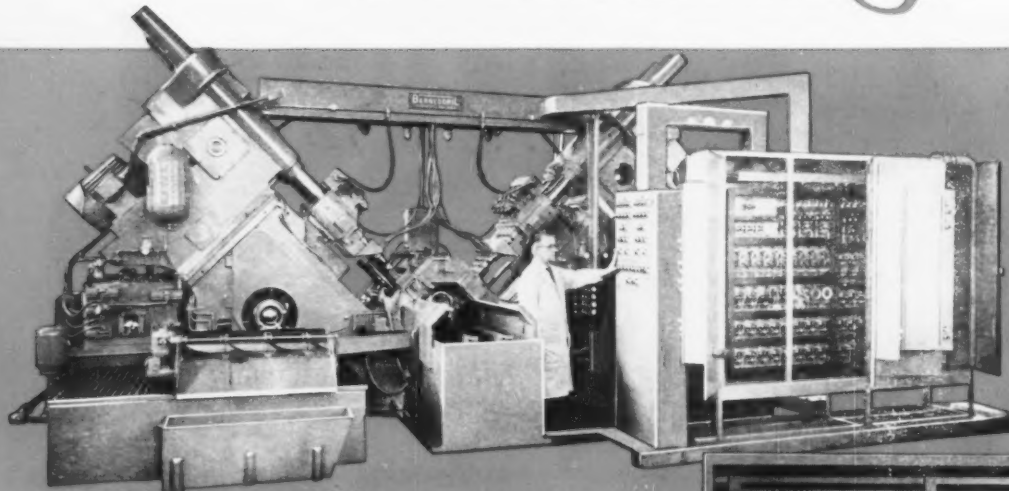


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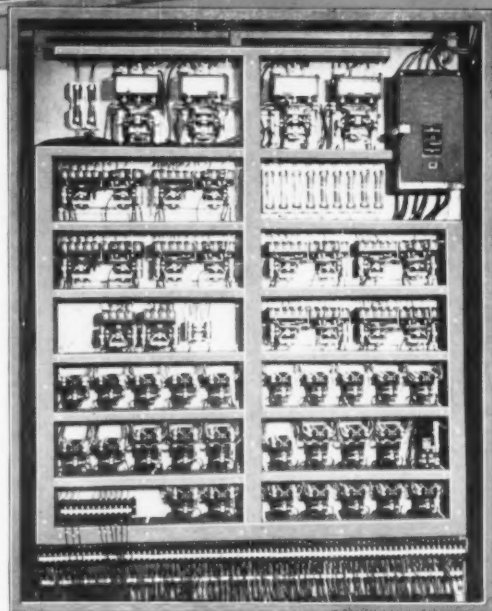
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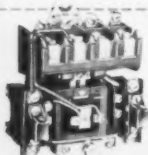
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# New Catalogues And Bulletins

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Type 418 special stainless is covered in a data sheet. It includes physical and mechanical properties, resistance to corrosion and oxidation. It's recommended for application in the 750 to 1100°F range. (Allegheny Ludlum Steel Corp.)

For free copy circle No. 1 on postcard, p. 121

## Sand Core Oven

More than a dozen advantages of one maker's dielectric sand core oven are given in a bulletin. (Allis-Chalmers Mfg. Co.)

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**Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 121.**

## Steel Strapping

How to save money on strapping strip steel coils is told in a company publication. It also contains other tips for better packaging, shipping and handling. (Signode Steel Strapping Co.)

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Factors which influence the cost of coil springs are discussed in a buyer's guide. (Hunter Spring Co.)

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Utility sets are covered in a bulletin. These units feature compactness and easy drive accessibility. (American Blower Div., American-Standard.)

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## Crushers

Hammermills, shredders, and rolling ring crushers are covered in a bulletin. It presents a comprehensive list of many ceramics, minerals, chemicals and metals now being reduced by users of these crushers. (American Pulverizer Co.)

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## Welding

Welding for nuclear pumping application is discussed in an 11-page report. Welding requirements for nuclear service are outlined and 15 specific do's and don'ts for nuclear welding are prescribed. (Byron Jackson Div., Borg-Warner Corp.)

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## Gun Applied Mortar

Information on mortar preparation, placing procedure, and general instructions for gun-applied linings appears in a booklet. (Universal Atlas Cement Co.)

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## Lime Buffing

A catalog offers data on a lime buffing composition recently developed. (Frederic B. Stevens, Inc.)

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## Gas Regulators

Pressure regulators for industrial compressed gases are detailed in a 40-page catalog. It deals with various cylinder, manifold, and pipeline regulators, both single- and two-

stage, and a variety of specialized equipment such as laboratory and metering regulators and gas proportioners. (Air Reduction Co., Inc.)

For free copy circle No. 10 on postcard, p. 121

## Engine Lathe

How a new 20-in. heavy-duty engine lathe gets the most from carbide and ceramic tools is told in a bulletin. It describes new features; these include: all-new 40-hp headstock, fine-increment selection of 36 speeds, new two-speed tailstock, scientifically planned operator convenience, etc. (R. K. LeBlond Machine Tool Co.)

For free copy circle No. 11 on postcard, p. 121

## Compressors

Integrally-built diesel-engine compressors are shown in a bulletin. (Ingersoll-Rand Co.)

For free copy circle No. 12 on postcard, p. 121

## Aluminum Pipe

Aluminum pipe for tank and vessel hook-up is the subject of a brochure. (Reynolds Metals Co.)

For free copy circle No. 13 on postcard, p. 121

## Winding Wire

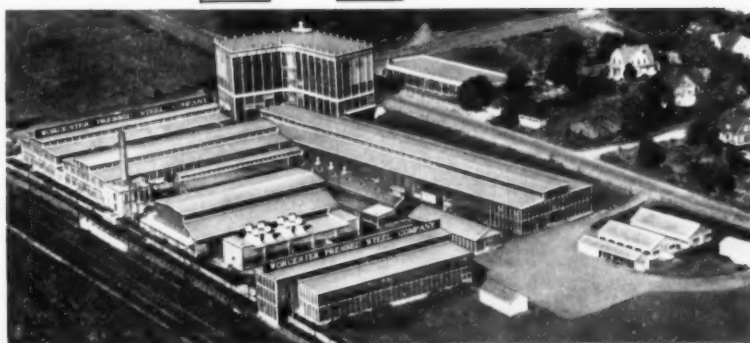
Bobbins for use in metalworking plants are covered in a catalog. The 12-page publication describes standard and special bobbins for winding wire and strip alloy. The bobbins are made from: (1) vulcanized fibre, (2) Phenolite laminated plastic, (3) hard, close-grained Northern Maple, (4) steel, (5) aluminum, and (6) special alloys. (Lestershire Spool Div., National Vulcanized Fibre Co.)

For free copy circle No. 14 on postcard, p. 121

## Small Parts

Small parts can be designed to save material and lower tooling and manufacturing costs. Machining and assembly operations can be reduced or eliminated. These are just two of many methods of product improvement discussed in a firm's product designer's kit. (For free

# BAM!



## Here's how Presteel gives you MORE FOR YOUR STAMPING DOLLAR

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Presses from 5 to 1500 tons for parts 1" or less up to 4' x 7' — a battery of equipment few companies could afford to maintain.

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**If you have a stamping problem—BAM!—think of Presteel. Let's get acquainted RIGHT NOW—personally or by letter.**

**WORCESTER PRESSED STEEL COMPANY**  
Barber Ave., Worcester 6, Mass.

# How to automate production

## Multipress® curbs costs of Dormeyer mixer parts . . . triples output by integrating three separate operations

Often, a series of operations can be combined to both improve product quality and cut production costs. This was the experience of Haber Corp. when they streamlined production of beater spindles for their Dormeyer automatic food mixers.

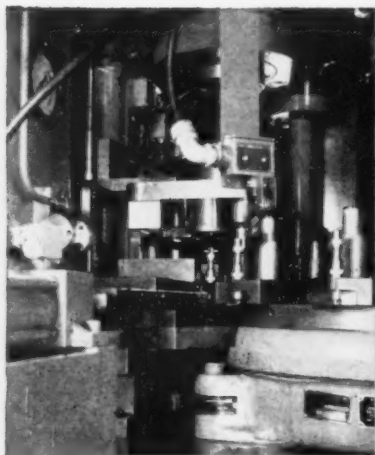
By reducing the size variations of slots cut into the spindles and thus eliminating the need for deburring, quality was boosted . . . costs cut.

A special 8-ton hydraulic Multipress was selected to combine three machining operations. Only loading parts on the 12-station hydraulic index table is performed manually. Once the cycle-start button is pressed, the parts advance step-by-step until a small flange-mounted cylinder ejects the finished beater spindles.

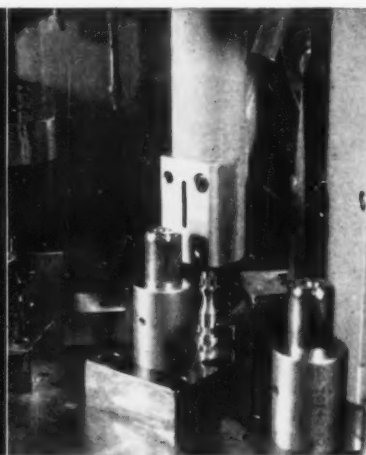
In separate manual operations, production rates of from 200 per hour for cutting slots to 450 per hour for deburring had been standard. With Multipress, a continuous flow of 1020 beater spindles per hour is achieved with only one operator.

Advance cost analysis estimated that equipment and tooling would be amortized within a year due to increased production and quality. Actual production proved this estimate too conservative.

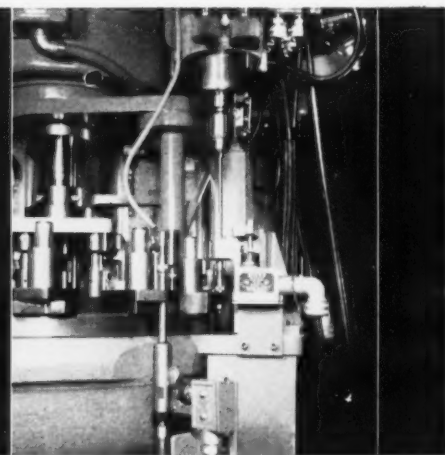
Find out how Denison hydraulic Multipress can perform a three-in-one job for your company—improving quality, speeding production and cutting costs. Write to Denison Engineering Division, American Brake Shoe Co., 1242 Dublin Road, Columbus 16, Ohio.



Ram descends to shear four slots, then holds down under full pressure as side cylinder advances broach for .050 slot. Chips are trimmed at next ram station.



Next, spindle receives hopper-fed sleeve under transfer mechanism. Sleeve is pressed over spindle end by a cylinder activated by descending ram.



In final operation, spindle is clamped and center hole reamed through by drill head. Flange-mounted cylinder then ejects spindle from fixture.



# hydraulically

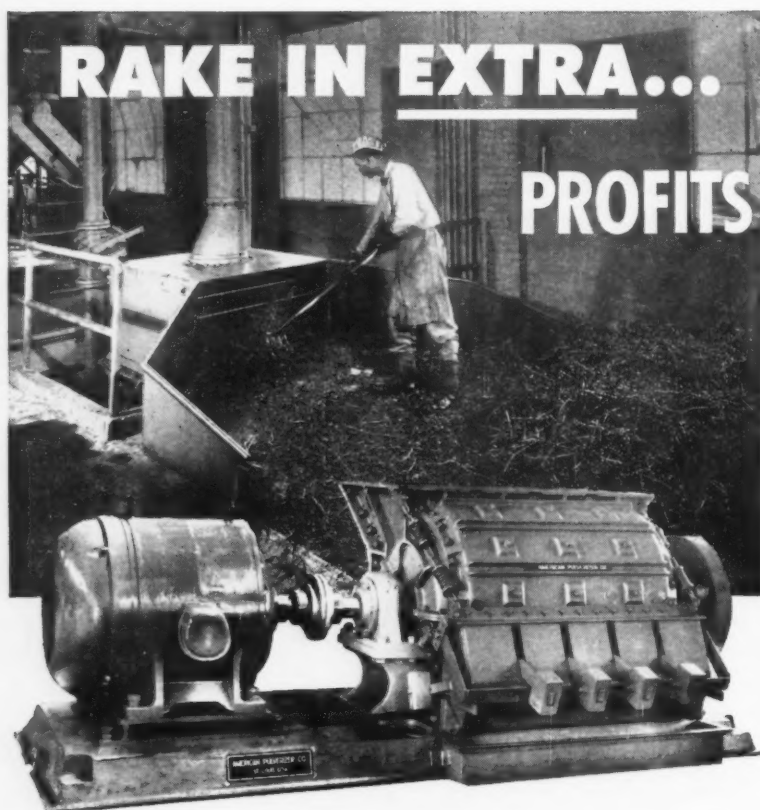
8-ton hydraulic Multipress equipped with 12-station index table. Index table is mounted over special bolster on 22-inch work circle, to which is attached one-ton capacity, foot mounted hydraulic cylinder with 12-inch stroke.



Various machining stages illustrated: (left to right) spindle prior to slotting; after shearing slots, showing chips; after trimming of slots; with sleeve pressed into place.

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## FREE LITERATURE

copy, write on company letterhead to Gries Reproducer Corp., 400 Beechwood Ave., New Rochelle, N. Y.)

### Controls

Pneumatic control for steel and allied industries is discussed in a 12-page folder. (Leeds & Northrup Co.)

For free copy circle No. 15 on postcard, p. 121

### Lab Safety

Laboratory safety is discussed in a pocket manual. It covers accident prevention, first aid, fire prevention, and safety equipment, and concludes with a safety bibliography. (Fisher Scientific Co.)

For free copy circle No. 16 on postcard, p. 121

### Metal Shearing

Types, sizes and grades of one maker's metal cutting knives appear in a digest. Slitters, squaring blades, alligator and bar knives are just a few of the types described. (The Hill Acme Co.)

For free copy circle No. 17 on postcard, p. 121

### Wire Rope

Wire rope recommendations for general contractors are listed in a bulletin. (Hazard Wire Rope Div., American Chain & Cable Co., Inc.)

For free copy circle No. 18 on postcard, p. 121

### Capacitors

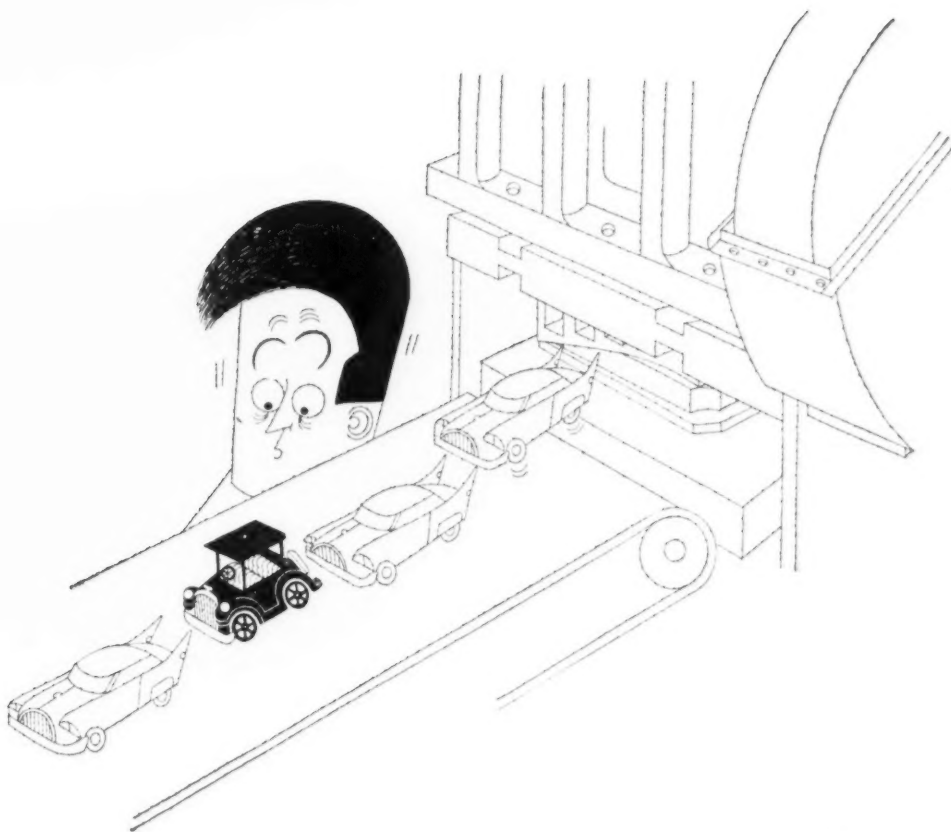
Micro-miniature capacitors for low-voltage, direct-current applications are described in a 4-page bulletin. These units are for use where large capacitance values are required in a small space. (General Electric Co.)

For free copy circle No. 19 on postcard, p. 121

### Press Accessory

A data sheet illustrates an OBI press maker's new air motor inclining device for its 45 to 200-ton models. (Niagara Machine & Tool Works.)

For free copy circle No. 20 on postcard, p. 121



## Got a forming problem?

SOLVE IT WITH CRUCIBLE KETOS. IT'S A NON-DEFORMING, OIL HARDENING TOOL STEEL, WHICH USERS FIND UNBEATABLE. YOU CAN GET IT QUICKLY FROM LOCAL CRUCIBLE WAREHOUSE STOCKS.

Crucible KETOS is especially suitable for blanking and forming dies. It has a wide heat treating range—low hardening temperature—minimum decarburization—and is non-deforming.

KETOS is one of dozens of special tool steels regularly stocked at Crucible warehouses. Deliveries are prompt in the sizes you want.

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# CRUCIBLE

## WAREHOUSE SERVICE

### Crucible Steel Company of America

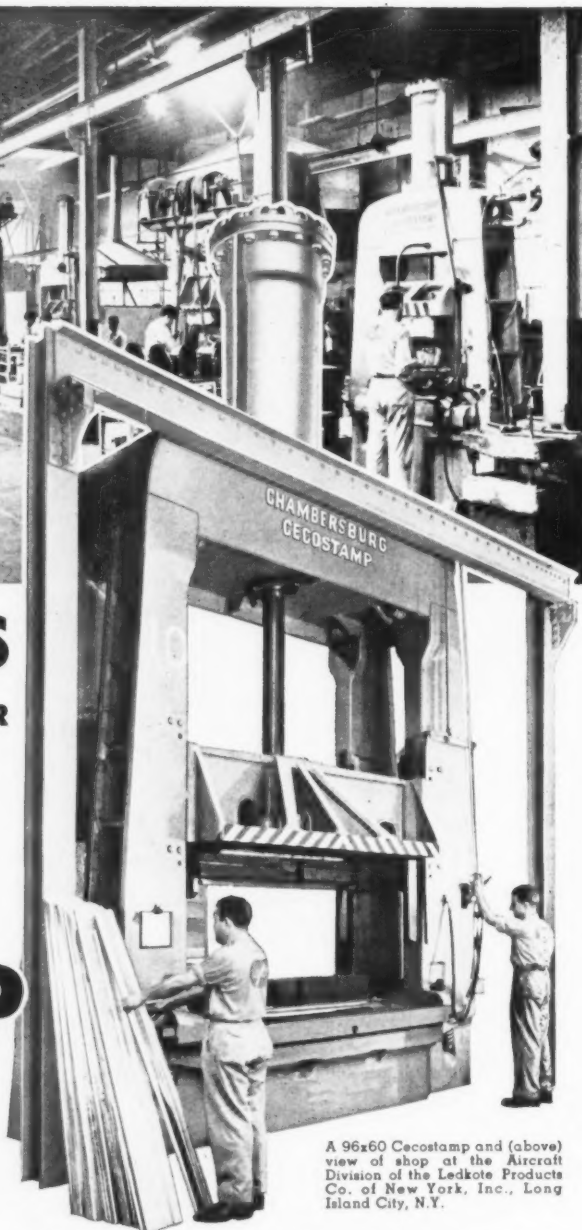
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Here's a quick way to increase capacity without sacrificing quality or accuracy. Add a Cecostamp to your shop. Subcontractors throughout the industry, like the Aircraft Division of the Ledkote Products Co. of New York, illustrated above, are finding, profitably, the value of the controlled impact, the versatility and the operating economy of Cecostamps. Cecostamps were originally designed for, and have kept pace with modern aviation metal forming requirements. There are standard



A 96x60 Cecostamp and (above) view of shop at the Aircraft Division of the Ledkote Products Co. of New York, Inc., Long Island City, N.Y.

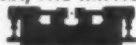
Cecostamps with working areas from 21"x18" to 120"x120" to fit nearly every metal shop need. The investment is a reasonable one, and deliveries can usually be arranged to suit your production needs.

If you're smart, you'll give this a lot of thought. Why not send for Bulletin 30-L-5?

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CHAMBERSBURG ENGINEERING CO.

Builders of THE IMPACTER



"FORGING IN MID-AIR"

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## FREE LITERATURE

This section starts on Page 114

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

### Shear Controls

How a complete electronic package, ready for installation on a large sheet metal shear, automates production operations is outlined in a bulletin. This unit controls the shears to ensure correct dimensions, straight sides and square corners. Totalizing counters record number of sheets cut-up and number of actual pieces obtained. (Sensory Inc.)

For free copy circle No. 21 on postcard

### Welding Automation

Automated welding setups are illustrated and described in a 4-page brochure. (Airline Welding & Engineering.)

For free copy circle No. 22 on postcard

### Switches

Mercury switches and a space-saving lighted pushbutton switch are described in two data sheets. (Micro Switch Div., Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 23 on postcard

### Tubing

Plastic coated metal tubing is described in a 4-page brochure. (Samuel Moore & Co.)

For free copy circle No. 24 on postcard

### Permanent Magnets

Permanent magnets are covered in a folder. It lists construction features, types of installations and tells how to select the correct magnet. (Magni-Power Co.)

For free copy circle No. 25 on postcard

### Foundry. Machining

Colorful catalog sheets contain many photos and interesting data on

a foundry and machine corporation. They describe the firm's services, products and some methods. Covered are: laboratory test runs, annealing, machine molding, loam molding, precision machine show work, casting, quality control and more. (Kutztown Foundry & Machine Corp.)

For free copy circle No. 26 on postcard

### Slitting Lines

Multiple, rotary, precision splitting lines are described in a bulletin. (Paxson Machine Co.)

For free copy circle No. 27 on postcard

### Foundry Practice

Several interesting foundry techniques are featured in a firm's publication. (Foundry Services, Inc.)

For free copy circle No. 28 on postcard

### Valves

Valves and cycle controllers for hydraulic press operation are covered in a 4-page bulletin. These valves take to 6000-psi. All parts are of non-corrosive materials. (Sinclair-Collins Valve Co.)

For free copy circle No. 29 on postcard

### Gloves

Gloves that resist rubber solvent chemicals, acids, snagging, abrasion and swelling are illustrated in a folder. (Surety Rubber Co.)

For free copy circle No. 30 on postcard

### Carbide

High production, general purpose carbide is announced in a bulletin. It covers application, physical properties, brazing and grinding. (Firth-Sterling, Inc.)

For free copy circle No. 31 on postcard

### Ovens

Turbo-convection ovens are covered in two data sheets. These ovens are designed for accurate heating in many large and small industries. Some of the oven applications are: tempering, normalizing and drawing of both ferrous and

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## FREE LITERATURE

non-ferrous metals, drying of ceramics, mold drying, welding rod storage, paint baking and many other uses. (L & L Mfg. Co.)  
 For free copy circle No. 32 on postcard

## Furnace

A company publication explains the economy and efficiency of a removable crucible furnace with new principle of operation. (Inductotherm Corp.)  
 For free copy circle No. 33 on postcard

## Wire Rope Slings

Three folders suggest applications for wire rope slings. (Wickwire Spencer Steel Div., Colo. Fuel and Iron Corp.)  
 For free copy circle No. 34 on postcard

## Detects Flaws

Literature gives data on a new material for aqueous phase magnetic particle inspection of metal. The product is nonflammable, odorless and self-cleaning. (Harry Miller Corp.)  
 For free copy circle No. 35 on postcard

## Ceramics

Ceramic materials are listed and described in a 20-page catalog. (Star Porcelain Co.)  
 For free copy circle No. 36 on postcard

## Teflon Tube

Heavy-walled Teflon tubing and rod are covered in a bulletin. It cites the plastic's varied mechanical properties to show its application as machined parts, gaskets, pump and valve parts. (Haveg Industries, Inc.)  
 For free copy circle No. 37 on postcard

## Extra Narrow Tapes

One company's promotional literature describes a new tape slitting technique. Using this method, it produces standard 60-yd rolls of any pressure-sensitive tape in precision widths as narrow as 1/32 in.

This process leaves perfectly clean edges and assures uniform width throughout the roll. (By-Buk Co.)  
 For free copy circle No. 38 on postcard

## Lube Fitting

Advantages of a special relief-type lubrication fitting appear in a folder. The fitting easily attaches to bearing housings of motors, machines or pillow blocks equipped with conventional relief plugs. (Key-stone lubricating Co.)  
 For free copy circle No. 39 on postcard

## Lube System

An 8-page brochure describes a new type circulating oil system. (The Farval Corp.)  
 For free copy circle No. 40 on postcard

## Torque Tester

Now available is a brochure describing a versatile torque testing fixture. It illustrates some typical applications. (P. A. Sturtevant Co.)  
 For free copy circle No. 41 on postcard

## Tap Attachments

High-speed sensitive tapping attachments that run in oil are discussed in a bulletin. (Ettco Tool & Machine Co., Inc.)  
 For free copy circle No. 42 on postcard

## Dip Brazing

Alumibraze, an alloy in a new form, offers an improved method for joining aluminum parts. So states a 4-page bulletin. It gives step-by-step details on dip brazing with the new powdered aluminum-silicon alloy. (Handy & Harman.)  
 For free copy circle No. 43 on postcard

## Ball Bearings

Containing a dozen pages, a catalog describes facilities of a major ball bearing producer. It explains how the company, manufacturing more than 6 million balls per day, is now using ultra-modern machinery to step up quality and delivery. (New Departure Div., General Motors Corp.)  
 For free copy circle No. 44 on postcard

# NOW! FROM PROGRESSIVE

## Customized Slotted Tapping Screws



Now you can get from PROGRESSIVE Slotted Tapping Screws with an extra customized touch — Slotted Tapping Screws which are custom-made to your order. This means: (1) specifically made for you — not bin stock parts; (2) fast, custom-handling of every order; *plus* (3) the double economy of low initial cost *and* the savings in your assembly operations possible only with high precision, torsion-tested fasteners.

STANDARDS AND SPECIALS CUSTOMIZED FOR YOUR NEEDS

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# New Production Ideas

## Equipment, Methods and Services

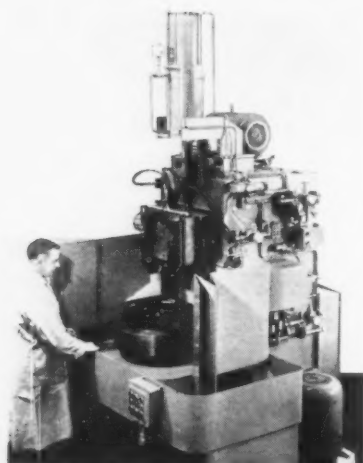


### Melting Furnace Magnetically Stirs Charge

Now in experimental foundry use, this 60-cycle coreless induction melting furnace is said to have many uses. Tests indicate that it's excellent in such fields as the production of high quality cast iron. The testers also recommend it for recovering iron turnings, recovering aluminum scrap, etc. The unit, called the Ajax-Junker furnace, was developed in Europe. It consists of a cylindrical induction coil surrounding a crucible-shaped refractory lined hearth. Heat is induced in the metal charge. One of the key

features of this new furnace type is the vigorous electro-magnetic stirring action in the molten metal. This stirring is particularly beneficial for fast, efficient melting of loose turnings and other finely divided scrap with low metal losses. The same stirring action also provides a means for fast and uniform alloying and closely maintaining alloy composition. Furnaces come in sizes from 1 to 10 tons, rated from 200 to 1500-kw. (Ajax Engineering Corp.)

For more data circle No. 45 on postcard, p. 121

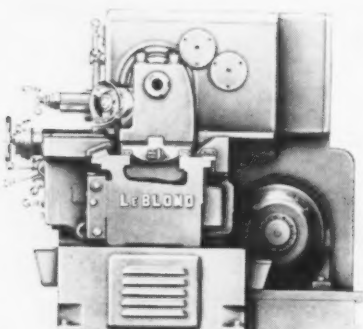


### Single Station Unit Handles Precision Finishing

Several jobs can be performed on a new line of single station finishing machines. These include: contour turning, boring and facing; straight boring; surface grinding; surface honing; ID grinding; OD grinding; contour milling; and horizontal and straight milling. Designed for rough and/or precision finishing operations, the machines use standard cam-actuated heads developed for multi-station units. The application of these interchangeable heads to a single-station machine makes pos-

sible single, completely automatic cycles of operation previously available only on the maker's multi-station, high production equipment. The units come in single or double-spindle models and with single, multiple or variable spindle speed drives. Motor drives from 3 to 20-hp per spindle are available. Cross slide travel is 5 in. Longitudinal slide travel on the single-station unit is 6 in. (The New Britain Machine Co.)

For more data circle No. 46 on postcard, p. 121



### Heavy-Duty Lathe Uses Carbide, Ceramic Tools

This 20-in. heavy-duty engine lathe uses 40 hp for working with ceramic and carbide tools. In the headstock, short, heavy shafts and fine-pitch precision-ground gears deliver power to the spindle with low no-load horsepower. There is plenty of power at low speeds, too. For example, at 10 rpm a cut can be taken as deep as 1/2 in. in 16-in.

diam work, feeding at 0.063-ipr. The lathe provides for 36 speeds, from 10 to 1300 rpm in geometric progression. Selections are made in fine increments, particularly in the low range. Here, small differences in rpm make big differences in cutting speed. (R. K. LeBlond Machine Tool Co.)

For more data circle No. 47 on postcard, p. 121

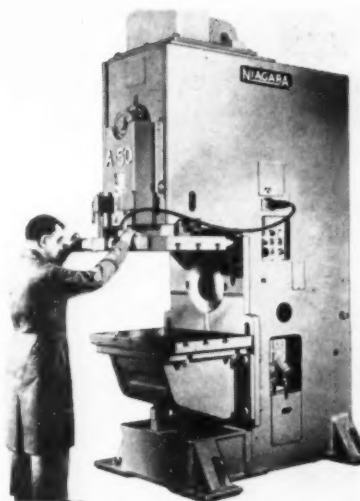


## Adjustable Bed Press Stresses Safety

Modernized and redesigned is this adjustable bed press. The compact unit's design incorporates several specialized controls and devices. These are neatly recessed in the sidewalls or completely housed behind flush panel doors. Specially equipped for secondary operations between automated presses in the production line, this press is said to be fast, safe and efficient. It has no overhanging or protruding components. The operator's panel, auxiliary power supply, flywheel brake operating lever, and safety block are recessed into the right side of

the press. On the opposite side, a panel door flush with the surface conceals the automatic oil circulating system. Neatly housed and enclosed in the back of the press are the air control panel and combination motor-press control panel. Space-saving compactness sums up the over-all description of its modern, enclosed, front-to-back crankshaft design. The press is designed for easy portability in connection with or beyond the production line, its maker says. (Niagara Machine & Tool Wks.)

For more data circle No. 48 on postcard, p. 121

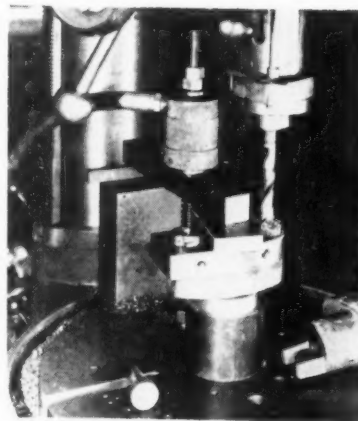


## Power Locking Unit Automates Clamping Setups

Manual setup clamping is a time and labor wasting operation. If you can avoid it, it's best to do so. One of the easiest ways to do this is to use power operated units. This power locking automatic setup clamp is one such tool. The clamp adapts to any standard machine, jig or fixture to replace nuts and bolts. Its basic unit consists of an air control, hydraulic booster, and one of three models of clamping heads. Compressed air operates it. This

passes through a filter-lubricator to an off-on control valve. With the valve open, air enters the air-hydraulic booster. This produces hydraulic pressure on the oil line. The pressure acts on the clamping heads, resulting in considerable locking force. Boosters come in three sizes, capable of operating one, two, three or four heads on the power operated unit. (Wilton Tool Mfg. Co.)

For more data circle No. 49 on postcard, p. 121

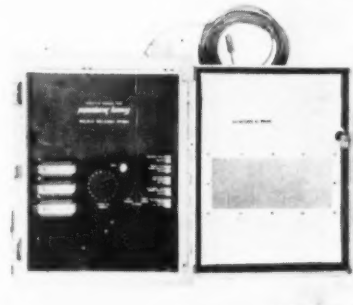


## "Package" Control is Widely Adaptable

Widely adaptable, this "package" control is for use on shears and machines that cut and fabricate sheets of metal and other materials. It is a fully contained electronic unit that readily adapts to: (1) Controlling steel sheet operations, (2) Counting all cuts, (3) Measuring productivity, (4) Automatically

operating many types of machine tools, (5) Insuring true production counts, (6) Eliminating rejects, (7) Eliminating expense waste, and (8) Overcoming the human factor. Dimensions of the control are: 20 high x 16 wide x 6-in. deep. (Sensory, Inc.)

For more data circle No. 50 on postcard, p. 121



## Wire Rope Sling Handles Heavy Jobs

This giant wire rope sling, 3-in. diam. is designed for moving heavy equipment. Using a dual-locking end, the big sling presents a striking contrast to its small counterpart, the 1/4-in. wire rope sling. The ending eliminates tucking, crushing or distortion of the sling body. Therefore no strength is lost in the

splice. Collars are applied merely to hold the wire ending in position. Full holding power is developed by the wire rope strands of the dead end binding around and against the live end in the wrapped section. The sling's breaking is rated at 720,000 lb. (American Chain & Cable Co., Inc.)

For more data circle No. 51 on postcard, p. 121



# STEEL MEN!

## FIGURE THE VALUE OF A BALANCED TANK

**T**HE ideal glass furnace is one which can be counted on to wear out evenly and uniformly, giving the operator the full potential value of every brick in every part of the tank.

Until a few years ago, however, such a tank was considered an obvious impossibility.

When Corhart Electrocast was first offered to the trade as a much superior glasshouse refractory, our new customers began using it to strengthen those portions of their furnaces which had always been the limiting factors in producing life.

This idea proved successful, but at the end of the fire, the Corhart was usually in such good shape that the natural result was to fortify the next weakest portions. This step-by-step process has now been followed through to its logical conclusion by most of our original customers: namely, the gradual increase of Corhart to a point where the life of the

former weak portions approximates the life of the easy-service portions. This ideal construction, with the judicious use of Corhart Electrocast, has led to what is termed "The Corhart Balanced Unit."

A Corhart Balanced Unit can be fabricated for a surprisingly small percentage increase in first cost. This percentage increase represents only a fraction of the increased life and total tonnage output.

Corhart Balanced Tanks are now widely used throughout the industry. More than sixty are now in service—and this, of course, is in addition to the dozens of installations in which Corhart is used as a spot refractory. Write us today for the complete facts and figures on a Corhart Balanced Tank of your company's type. Full designs, specifications and quotations will be gladly furnished, without obligation. Address: Corhart Refractories Co., Incorporated, 16th & Lee Sts., Louisville, Ky.



**CORHART  
ELECTROCAST  
REFRATORIES**

**T**HIS ad appeared more than 25 years ago—in January, 1932. At that time Corhart Electrocast was still so new in the glass industry that only a few of the most progressive companies dared buy it. It was, *and still is*, "one of the world's highest-priced refractories". Yet now its use is practically universal . . .

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## The Iron Age Summary

# Steel Outlook Is Improving

**Mills note slightly better tone to the market. Users have settled down to steady pattern.**

**July-August may be year's production low point due to vacations and hot weather.**

■ The mills note a "slightly better" tone in the market this week. It's not enough to foreshadow a definite turn for the better. But buyers are not shifting about as much as they were. What business there is seems to be on a firmer footing.

The pulling and hauling that went on earlier in the year appears to be over. Customers have settled down to a steady pattern. Some of the "minor" users of sheet and strip have stepped up their orders. Indications are that the inventory cutbacks have brought stocks down to workable levels.

**Optimism Increasing**—Optimism among steel executives is increas-

ing. They feel that inventories have been cut to the point that a pickup in the business of automotive and other major consumers would be felt almost immediately at the mill level.

Steel production this week will continue at about the same pace as last week despite the Memorial Day holiday. Even though holiday premium wage rates must be paid, the mills have not scheduled any appreciable cutbacks. This in itself is a good sign of producer confidence in the market outlook.

**Outside Opinion**—Scrap dealers, too, are feeling more optimistic. Scrap prices have firmed up in the last several weeks. Dealers in some areas have started to lay down the better grades of scrap. This is as good an indication as any that the scrap trade is thinking in terms of a late summer or fall pickup.

Although users of oil country goods are not clamoring as frantically as before for shipments, pro-

ducers claim their order books show no signs of a letdown in demand. Third quarter books are full in most cases and the outlook for the year is good.

**Hedging Picture**—Meanwhile, time has just about run out for buyers who hoped to do some hedging against next July's steel price increase. None-the-less, the mills are in a position to deliver some products so quickly that there's still a fighting chance. Generally, hedge buying overall did not amount to much, although it was stronger in some areas than in others.

It begins to look as though the July-August period will be the low point for steel output this year. Consumer and mill vacations plus the usual loss of mill efficiency during the hot months will contribute to the decline. Indications are that the mills will take advantage of the slack to work in much-needed maintenance and repair.

### Steel Output, Operating Rates

	This Week	Last Week	Month Ago	Year Ago
<b>Production</b>				
(Net tons, 000 omitted)	2,228	2,202	2,304	2,375
<b>Ingot Index</b>				
(1947-1949=100)	138.7	137.0	143.4	147.9
<b>Operating Rates</b>				
Chicago	86.0	85.0*	87.0	99.5
Pittsburgh	92.0	91.0	90.0	98.0
Philadelphia	102.0	102.0	100.0	106.0
Valley	72.0	73.0	82.0	99.0
West	104.0	104.5	100.0	102.0
Buffalo	95.0	59.0	95.0	105.0
Cleveland	83.0	80.0	86.0	103.0
Detroit	88.0	88.0	90.0	97.0
S. Ohio River	81.0	82.0	64.0	90.0
South	93.0	93.0	95.0	23.5
Upper Ohio R.	87.0	87.0	92.0	104.0
St. Louis	85.0	84.5*	90.0	99.0
Northeast	66.5	66.5	64.0	93.0
<b>Aggregate</b>	87.0	86.0	90.0	96.5

\*Revised

### Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
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#### Composite price

Finished Steel, base	5.670	5.670	5.670	5.179
Pig Iron (Gross ton)	\$64.56	\$64.56	\$64.56	\$60.29
Scrap, No. 1 hvy (Gross ton)	\$47.50	\$47.17	\$42.83	\$47.50

#### Nonferrous

Aluminum ingot	27.10	27.10	27.10	25.90
Copper, electrolytic	32.00	32.00	32.00	46.00
Lead, St. Louis	14.80	14.80	15.80	15.80
Magnesium ingot	36.00	36.00	36.00	34.50
Nickel, electrolytic	74.00	74.00	74.00	64.50
Tin, Straits, N. Y.	98.375	97.875*	99.25	96.25
Zinc, E. St. Louis	11.50	11.50	13.50	13.50

\*Revised

# Is Sheet Slowdown Nearing End?

**Producers see a few signs that the sheet ordering tide may be turning.**

**Even with July shaping up as worst month so far, market has firmer tone.**

■ Steel marketers hoping for a pick-up in sheet ordering are encouraged. They're finding some evidence that the tide is turning.

Customer stock cutting, for example, seems definitely to have bottomed out. "The water's out of inventories now," says one mill sales official, "any customer activity has got to show up quickly in orders."

In addition, buyers are no longer hemming and hawing about sheet orders—pushing them ahead and then setting them back again. And some Eastern warehouses, which have been jammed with sheet for months, are now entering the market again to a limited degree.

**Watch August**—However, sheet producers who supply the automotive market are still beating the bushes looking for orders. They don't see any relief from the sales drought in July, but have high hopes for an August upsurge.

That opinion appears general, because vacation-minded firms just aren't thinking in terms of July ordering. As a result, that month will probably see sheet orders at their lowest for the year. But long-range optimism about the market remains.

**Plates and Shapes**—Market continues tight except for lighter, nar-

row plate sizes suffering from strip mill competition and for standard structurals where buyers and warehouses occasionally bypass their full allotments.

Orders for light plate are down in the third quarter, a **Pittsburgh** producer declares. Light structurals are relatively plentiful in that market. But plates over 1 in. thick and 72 in. wide are tight, as are heavy structurals.

A large **Philadelphia** area producer lists wide flange shapes and sheared mill plate as the two items still most wanted by the buyers. Light plate is moving fairly strongly in the market.

Buyers in the **Cleveland** area are taking advantage of the abundance of light plate to have it sheared up into flats at a price saving of about \$20 a ton. Plate most used is 1/4, 5/16, 3/8, and 7/16 in. thick. These flats can be used where a rough sheared edge is satisfactory.

Structurals, both standard and wide flanged, continue at **Chicago** on quota in the third quarter. Delivery dates on light structurals and angles are around 8 weeks. Ware-

houses there which grabbed up off-sizes of plate in light gage, narrow widths are regretting the move now. There is little call for those items.

On the **West Coast** shipments of light plate from the East are slowing down. Customers now want heavier product, 1/2 in. and over.

**Bar**—Ordering is still lagging. Producers, particularly of cold finished, are feeling the pinch. Except for some of the larger sizes of bar customers still aren't showing order interest.

A mild buying upsurge for hot-rolled by **Philadelphia** warehouses is reported by two large mills in the area. Bar mill at Fairless Works remains closed until beginning of June during 2-week vacation for employees.

**Pittsburgh** warehouses are well stocked with bar and they aren't interested in buying.

Hot-rolled bar deliveries at **Chicago** are running about 4-6 weeks, reflecting a mild upturn due to hedge buying. However, product is getting little customer attention for July delivery. Cold-finished continues in slump with some producers on a three or four-day week.

**West Coast** mills are quoting a week to ten days on bar deliveries with big orders being handled in about 4 weeks. Poor weather is hampering sales of reinforcing bars to construction users.

**Wire Products**—Market is showing no steam, although demand for manufacturers wire is holding fairly steady. It will probably show a drop in July followed by an August pickup. Merchant wire products are mostly available right off the shelf.

**Sheet and Strip**—Producers and sellers are cheered by a slight bulge in June ordering reflecting customer price hedging.

Sheet production in the **Cleveland** area is now under 70 pct of capacity, largely due to the slow appliance and auto market.

Cold-rolled sheets are in ample supply in the **West Coast** area, although mills are doing a little extra selling to keep them moving.

## PURCHASING AGENT'S CHECKLIST

What predicted cutbacks of aircraft in favor of missiles mean to aircraft suppliers.

P. 51

Steelmen look for 4th quarter surge in sales.

P. 59

How to get more for your stamping dollar.

P. 97



# COMPARISON OF PRICES

(Effective May 27, 1957)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*

	May 27 1957	May 21 1957	Apr. 30 1957	May 29 1956
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	4.675¢	4.675¢	4.675¢	4.325¢
Cold-rolled sheets	5.75	5.75	5.75	5.325
Galvanized sheets (10 ga.)	6.30	6.30	6.30	5.95
Hot-rolled strip	4.675	4.675	4.675	4.325
Cold-rolled strip	6.870	6.870	6.870	6.28
Plate	4.87	4.87	4.87	4.62
Plates, wrought iron	10.40	10.40	10.40	10.40
Stainl's C-R strip (No. 302)	50.00	50.00	50.00	44.50

<b>Tin and Terneplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$10.30	\$10.30	\$10.30	\$9.85
Tin plate, electro (0.50 lb.)	9.00	9.00	9.00	8.55
Special coated mfg. ternes	9.55	9.55	9.55	9.10

<b>Bars and Shapes: (per pound)</b>				
Merchant bars	5.075¢	5.075¢	5.075¢	4.65¢
Cold finished bars	6.85	6.85	6.85	5.90
Alloy bars	6.125	6.125	6.125	5.65
Structural shapes	5.00	5.00	5.00	4.60
Stainless bars (No. 302)	43.25	43.25	43.25	38.25
Wrought iron bars	11.50	11.50	11.50	11.50

<b>Wire: (per pound)</b>				
Bright wire	7.20¢	7.20¢	7.20¢	6.60¢

<b>Rails: (per 100 lb.)</b>				
Heavy rails	\$5.275	\$5.275	\$5.275	\$4.725
Light rails	6.25	6.25	6.25	5.65

<b>Semifinished Steel: (per net ton)</b>				
Re-rolling billets	\$74.00	\$74.00	\$74.00	\$68.50
Slabs, re-rolling	74.00	74.00	74.00	68.50
Forging billets	91.50	91.50	91.50	84.50
Alloy blooms, billets, slabs	107.00	107.00	107.00	96.00

<b>Wire Rod and Skelp: (per pound)</b>				
Wire rods	5.80¢	5.80¢	5.80¢	5.025¢
Skelp	4.625	4.625	4.625	4.225

<b>Finished Steel Composite: (per pound)</b>				
Base price	5.670¢	5.670¢	5.670¢	5.170¢

**Finished Steel Composite**  
Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite**  
Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

**Steel Scrap Composite**  
Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	May 27 1957	May 21 1957	Apr. 30 1957	May 29 1956
<b>Pig Iron: (per gross ton)</b>				
Foundry, del'd Phila.	\$68.88	\$68.88	\$68.88	\$65.26
Foundry, Valley	65.00	65.00	65.00	60.50
Foundry, Southern Cin'ti	67.17	67.17	67.17	62.93
Foundry, Birmingham	59.00	59.00	59.00	55.00
Foundry, Chicago	65.00	65.00	65.00	60.50
Basic, del'd Philadelphia	68.38	68.38	68.38	64.48
Basic, Valley furnace	64.50	64.50	64.50	60.00
Malleable, Chicago	65.00	65.00	65.00	60.50
Malleable, Valley	65.00	65.00	65.00	60.50
Ferromanganese, cents per lb.	12.75¢	12.75¢	12.75¢	9.50¢
74 to 76 pct Mn base.				

<b>Pig Iron Composite: (per gross ton)</b>				
Pig iron	\$64.56	\$64.56	\$64.56	\$60.29

<b>Scrap: (per gross ton)</b>				
No. 1 steel, Pittsburgh	\$47.50	\$46.50	\$42.50	\$45.50
No. 1 steel, Phila. area	51.50	51.50	47.50	49.50
No. 1 steel, Chicago	43.50	43.50	38.50	48.50
No. 1 bundles, Detroit	39.00	39.00	34.50	41.50
Low phos., Youngstown	48.50	45.50	44.50	51.50
No. 1 mach'y cast, Pittsburgh	56.50	54.50	51.50	56.50
No. 1 mach'y cast, Philadel'a	56.50	56.50	55.50	54.50
No. 1 mach'y cast, Chicago	47.50	47.00	45.00	51.50

<b>Steel Scrap Composite: (per gross ton)</b>				
No. 1 heavy melting scrap	\$47.50	\$47.17	\$42.83	\$47.50

<b>Coke, Connellsville: (per net ton at oven)</b>				
Furnace coke, prompt	\$15.38	\$15.38	\$15.38	\$14.50
Foundry coke, prompt	\$17.50-\$19	\$17.50-\$19	\$17.50-\$19	\$17.50

<b>Nonferrous Metals: (cents per pound to large buyers)</b>				
Copper, electrolytic, Conn.	32.00	32.00	32.00	46.00
Copper, Lake, Conn.	32.00	32.00	32.00	46.00
Tin, Straits, New York	98.375*	97.875*	99.25	96.25
Zinc, East St. Louis	11.50	11.50	13.50	15.80
Lead, St. Louis	14.80	14.80	15.80	15.80
Aluminum, virgin ingot	27.10	27.10	27.10	25.90
Nickel, electrolytic	74.00	74.00	74.00	64.50
Magnesium, ingot	36.00	36.00	36.00	34.50
Antimony, Laredo, Tex.	33.00	33.00	33.00	33.00
* Tentative. † Average. * Revised.				

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

## STAINLESS STEEL

Base price cents per lb f.o.b. mill

→ To identify producers, see Key on P. 140 →

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. B6	66.50	67.00	67.50	68.00	
Birmingham R3	58.50	59.00*			
Birmingham W9	58.50	59.00*	63.00		
Birmingham U4	58.50	59.00*	63.00		
Buffalo R3	64.50	65.00	65.50	66.00	
Buffalo H1	64.50	65.00	65.50	66.00	
Buffalo W6	64.50	65.00	65.50	66.00	
Chester P2	66.50	67.00	67.50		
Chicago I4	64.50	65.00	65.50	66.00	
Cleveland A5	64.50	65.00	65.50	66.00	69.50†
Cleveland R3	64.50	65.00	65.50	66.00	
Duluth I4	64.50	65.00	65.50	66.00	69.50†
Erie I4	64.50	65.00	65.50	66.00	69.50†
Everett M6	66.00	66.50	67.00		
Fontana K1	72.50	73.00			
Geneva, Utah C7	64.50	65.00			
Granite City G2	66.40	66.90	67.40		
Hubbard Y1	64.50	65.00	65.50		
Ironton, Utah C7	64.50	65.00			
Midland C11	64.50				
Minnequa C6	66.50	67.00	67.50	68.00	
Monessen P6	64.50				
Neville Ia. P4	64.50	65.00	65.50	66.00	69.50†
N. Tonawanda T1	64.50	65.00	65.50	66.00	
Sharpsville S3	64.50	65.00	65.50	66.00	
So. Chicago R3	64.50	65.00	65.50		
Swedeland A2	66.50	67.00	67.50	68.00	
Toledo I4	64.50	65.00	65.50	66.00	
Troy, N. Y. R3	66.50	67.00	67.50	68.00	72.50
Youngstown Y1			65.00	65.50	

**DIFFERENTIALS:** Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. \* Add \$1.00 for 0.31 to 0.69 pct phos. † Intermediate low phos. ‡ Add \$1.00 for 0.31 to 0.50 pct phos.

Silvery Iron: Buffalo (6 pct), H1, \$78.50; Jackson, J1, I4 (Globe Div.), 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. \* Add \$1.00 for 0.31 to 0.69 pct phos. † Intermediate low phos. ‡ Add \$1.00 for 0.31 to 0.50 pct phos.

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	21.25	22.75	22.25	24.25	—	26.00	38.25	31.00	35.50	—	16.00	27.75	16.25
Slabs, billets	26.00	29.00	27.00	30.25	30.75	32.00	47.50	38.50	44.75	—	20.75	—	21.00
Billets, forging	—	35.00	35.75	36.50	39.50	39.00	59.75	45.25	53.50	30.75	27.25	27.75	27.75
Bars, struct.	40.50	41.25	42.50	43.25	46.25	46.00	70.25	53.25	62.25	36.25	32.50	33.00	33.00
Plates	42.50	43.25	44.50	45.50	48.00	48.75	73.75	57.50	67.00	38.75	33.75	35.50	34.50
Sheets	46.75	47.25	49.25	50.00	—	53.25	78.25	63.00	76.25	46.50	38.75	46.50	39.25
Strip, hot-rolled	34.50	37.50	35.75	39.00	—	42.50	66.50	51.50	61.00	—	29.75	—	30.75
Strip, cold-rolled	43.25	47.25	45.75	50.00	—	53.25	78.25	63.00	76.25	46.50	38.75	46.50	39.25
Wire CF; Rod HR	—	39.25	40.25	41.00	44.00	43.75	66.75	50.50	59.25	34.50	31.00	31.50	31.50
			40.50	41.25			67.00	51.00	59.50				

## STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Harrison, N. J., D3; Youngstown, C3; Sharon, Pa., S3; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1; New Bedford, Mass. (.25¢ per lb higher), R6; Gary, U1 (.25¢ per lb higher).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T3; Ft. Wayne, I4; Philadelphia, D5; Detroit, R5; Gary, U1.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Philadelphia, D5; Vandergrift, Pa., U1; Gary, U1.

Forgings billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1.

# Dealers Hold Scrap As Market Firms

**Waiting game continues. Dealers continue to hold what they have in anticipation of higher prices.**

**But mill inventories are high and no great price rise is indicated.**

■ The market continues to gain strength, although price increases are not as general as in recent weeks.

Tipoff to the real status of the scrap market is in railroad grades, which are substantially up, and a gain in the Pittsburgh market.

Dealers continue to hold what they have, waiting for higher prices. Good scrap is hard to get and the recent statement that it is easier to sell than to buy continues to be the rule.

Opinion in the trade is that June industrial lists will peg the market. Early lists to close in outlying areas indicate the market is \$3 to \$4 above previous lists.

Industrial tonnage is down. This, coupled with low dealer levels, indicates higher prices. On the other side, mill operating rates are not too encouraging and, even with long absences from the market, mill inventories continue to be high.

There are few significant changes in the price structure of steelmaking grades. However, this does not reflect an easing market. Offers to buy at low prices are rejected and there are few offers to sell.

**Pittsburgh**—Scrap prices are up \$1 for No. 1 grades. Shipments have dropped to a trickle and brokers are paying over the mill price for openhearth grades. There are re-

ports of scattered broker purchases as high as \$48 for No. 1 heavy melting. However, there is not a general buildup in broker bidding. A radical jump in prices does not seem to be indicated.

**Chicago** — In the face of strong mill opposition, scrap prices made scattered advances. Railroad grades pushed upward again, while steel-making grades halted temporarily in an absence of fresh mill buying at new price levels. Advances have failed to bring in a heavier flow of scrap.

**Philadelphia** — Good scrap continues scarce. Mill offers to buy at current prices were not being covered by dealers or brokers. The scarcity is reflected at the piers, where at least one export shipment is being delayed. A \$2 rise in cupola cast is due to purchases by two large pipe foundries. The price of 2 ft low phos, quoted incorrectly last week, should have been \$1 higher at \$56-\$57.

**New York** — The market continues to show new strength. Steel-making and blast furnace grades are up \$1 to a top of \$48 for No. 1 heavy melting. Cast grades are up \$2. The trade expects steelmaking grades to keep going up. Higher prices now seem to reflect export orders plus broker reluctance to sell. Domestic is firm, but not unusually heavy.

**Detroit** — Speculation is that the prices of June automotive lists now will be well up from last month. Industrial tonnages are off 10 to 15 pct from previous months and dealer scrap is still scarce.

**Cleveland**—The market took on a firmer tone due more to a shortage in dealer yards than any new purchases. One Valley mill bought small quantities of electric furnace steel for \$49. Industrial lists closing this week are expected to bring higher prices. Signs indicate a mild upsurge is in prospect, but low operations keep the overall outlook less optimistic.

**St. Louis**—Prices of scrap have moved up on nearly all grades except No. 1 and No. 2 heavy melting and bundles. Increases range from \$3 to \$7 per ton. The market is strong, but it is strictly a broker's market. Dealer scrap is not moving, but there is not much to be had. Mills are buying some railroad items, which are rebounding.

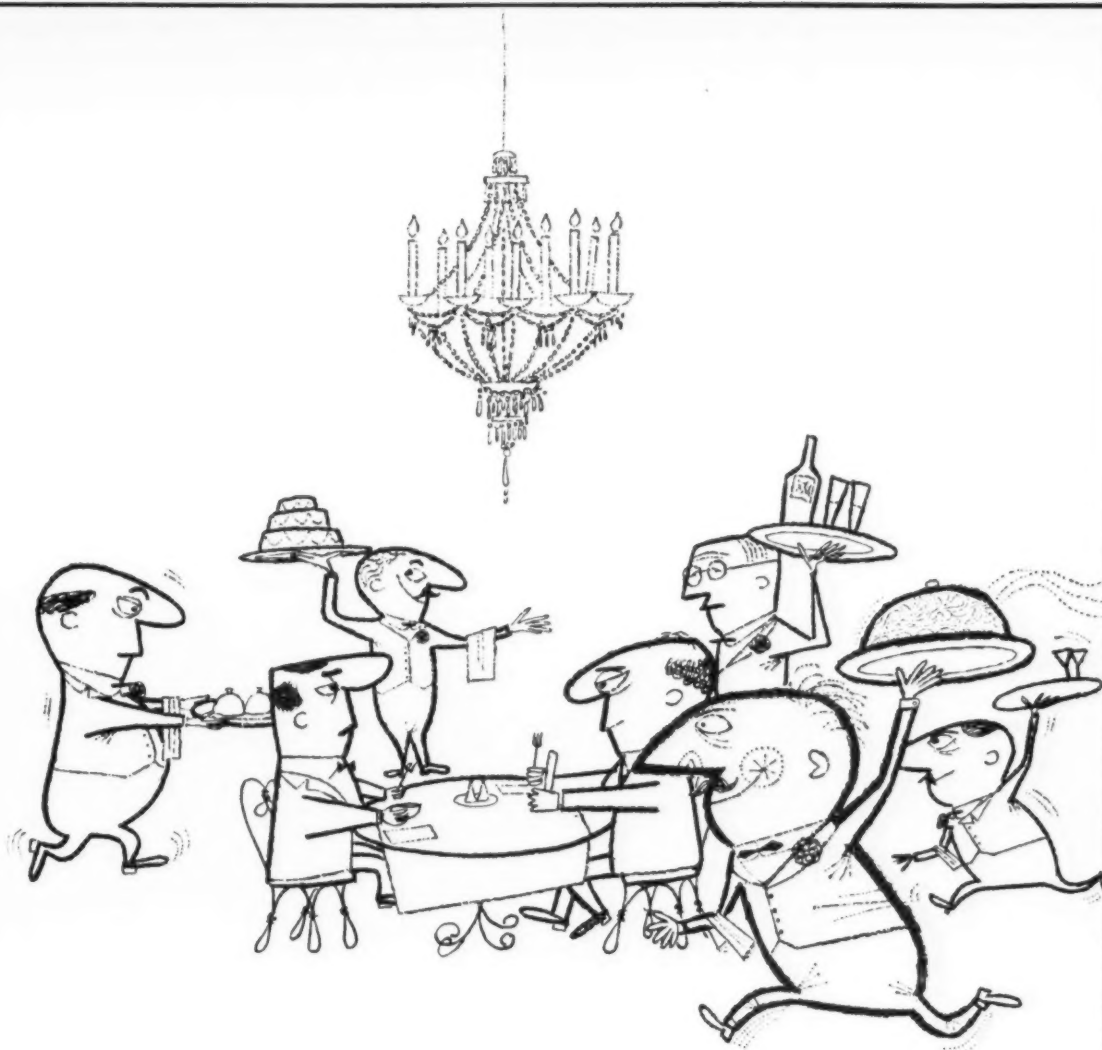
**Birmingham**—Dealers are holding onto their limited supplies of scrap anticipating higher prices and mills are having difficulty getting enough to supply their needs. Brokers are still paying premiums to fill orders on hand for openhearth scrap.

**Cincinnati**—The market picked up strength to the extent of about \$3. Some factory bundles at Louisville sold for \$48 on cars. Pittsburgh mills are renewing interest in scrap from downriver areas. Area bundles this month are expected to go up with revived operating rates.

**Buffalo** — Prices remain unchanged in an inactive market. Dealers report scrap is still in short supply. This market has not rebounded as have others, but feeling is that prices may rise with next purchases.

**Boston** — Prices of steelmaking grades are up and the market continues to firm. Scrap is in low supply here and brokers can't get what they want from dealers. Brokers say it's easier to sell than to buy.

**West Coast**—Prices for all grades remain steady with scrap yards up and down the coast pretty well cleaned out. Exporters are said to be paying \$4 per ton over quoted prices to fill out Japanese shipments.



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# SCRAP PRICES (Effective May 27, 1957)

## Pittsburgh

No. 1 hvy. melting	\$47.00 to \$48.00
No. 2 hvy. melting	43.00 to 44.00
No. 1 dealer bundles	47.00 to 48.00
No. 1 factory bundles	52.00 to 53.00
No. 2 bundles	41.00 to 42.00
No. 1 busheling	46.00 to 47.00
Machine shop turn.	31.00 to 32.00
Mixed bor. and ms. turn.	31.00 to 32.00
Shoveling turnings	35.00 to 36.00
Cast iron borings	35.00 to 36.00
Low phos. punch'g plate	51.00 to 52.00
Heavy turnings	44.00 to 45.00
No. 1 RR. hvy. melting	51.00 to 52.00
Scrap rails, random lgth.	61.00 to 62.00
Rails 2 ft and under	68.00 to 69.00
RR. steel wheels	60.00 to 61.00
RR. spring steel	60.00 to 61.00
RR. couplers and knuckles	60.00 to 61.00
No. 1 machinery cast.	56.00 to 57.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	45.00 to 46.00

## Chicago

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	41.00 to 42.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	49.00 to 50.00
No. 2 bundles	36.00 to 37.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. punch'g plate	51.00 to 52.00
Low phos. 3 ft and under	48.00 to 49.00
No. 1 RR. hvy. melting	51.00 to 52.00
Scrap rails, random lgth.	56.00 to 57.00
Rolling rails	63.00 to 64.00
Rails 2 ft and under	62.00 to 63.00
Locomotive tires cut	56.00 to 57.00
Cut bolsters & side frames	57.00 to 58.00
Angles and splice bars	60.00 to 61.00
RR. steel car axles	71.00 to 72.00
RR. couplers and knuckles	54.00 to 55.00
No. 1 machinery cast.	47.00 to 48.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	41.00 to 42.00
Cast iron brake shoe	43.00 to 44.00
Cast iron wheels	50.00 to 51.00
Malleable	57.00 to 58.00
Stove plate	43.00 to 44.00
Steel car wheels	56.00 to 57.00

## Philadelphia Area

No. 1 hvy. melting	\$51.00 to \$52.00
No. 2 hvy. melting	43.00 to 44.00
No. 1 dealer bundles	53.00 to 54.00
No. 2 bundles	41.00 to 42.00
No. 1 busheling	52.50 to 53.50
Machine shop turn.	34.00 to 35.00
Mixed bor. short turn.	35.00 to 36.00
Cast iron borings	35.00 to 36.00
Shoveling turnings	37.00 to 38.00
Clean cast chem. borings	39.00 to 40.00
Low phos. 5 ft and under	55.00 to 56.00
Low phos. 2 ft and under	56.00 to 57.00
Low phos. punch'g	56.00 to 57.00
Elec. furnace bundles	54.00 to 55.00
Heavy turnings	47.00 to 48.00
RR. steel wheels	59.00 to 60.00
RR. spring steel	59.00 to 60.00
Rails 18 in. and under	68.00 to 69.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	54.00 to 55.00
Cast iron car wheels	59.00 to 60.00
Malleable	61.00 to 62.00
Unstripped motor blocks	39.00 to 40.00
No. 1 machinery cast.	56.00 to 57.00

## Cleveland

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	36.00 to 37.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	26.00 to 27.00
Cut structural & plates, 2 ft & under	47.00 to 48.00
Drop forg. flashings	41.00 to 42.00
Low phos. punch'g plate	45.00 to 46.00
Foundry steel, 2 ft & under	42.00 to 43.00
No. 1 RR. heavy melting	46.00 to 47.00
Rails 2 ft and under	69.00 to 70.00
Rails 18 in. and under	70.00 to 71.00
Railroad grate bars	32.00 to 33.00
Steel axle turnings	30.00 to 31.00
Railroad cast.	53.00 to 54.00
No. 1 machinery cast.	51.00 to 52.00
Stove plate	46.00 to 47.00
Malleable	56.00 to 57.00

## Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

## Youngstown

No. 1 hvy. melting	\$47.00 to \$48.00
No. 2 hvy. melting	41.00 to 42.00
No. 1 dealer bundles	47.00 to 48.00
No. 2 bundles	39.00 to 40.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	27.00 to 28.00
Low phos. plate	48.00 to 49.00

## Buffalo

No. 1 hvy. melting	\$40.00 to \$41.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 busheling	40.00 to 41.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	32.00 to 33.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	27.00 to 28.00
Low phos. plate	44.00 to 45.00
Scrap rails, random lgth.	56.00 to 57.00
Rails 2 ft and under	60.00 to 61.00
RR. steel wheels	49.00 to 50.00
RR. spring steel	49.00 to 50.00
RR. couplers and knuckles	49.00 to 50.00
No. 1 machinery cast.	45.00 to 46.00
No. 1 cupola cast.	41.00 to 42.00

## Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$37.50 to \$38.50
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	38.50 to 39.50
No. 2 bundles	29.00 to 30.00
No. 1 busheling	37.50 to 38.50
Drop forge flashings	37.50 to 38.50
Machine shop turn.	20.00 to 21.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	23.00 to 24.00
Low phos. punch'g plate	37.50 to 38.50
No. 1 cupola cast.	46.00 to 47.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	43.00 to 44.00
Automotive cast.	52.00 to 53.00

## St. Louis

No. 1 hvy. melting	\$41.00 to \$42.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	41.00 to 42.00
No. 2 bundles	32.00 to 33.00
Machine shop turn.	26.00 to 27.00
Cast iron borings	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
No. 1 RR. hvy. melting	51.00 to 52.00
Rails, random lengths	52.00 to 53.00
Rails 18 in. and under	62.00 to 63.00
Locomotive tires uncut	50.00 to 51.00
Angles and splice bars	54.00 to 55.00
Std. steel car axles	67.00 to 68.00
RR. specialties	54.00 to 55.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	43.00 to 44.00
Stove plate	41.00 to 42.00
Cast iron car wheels	45.00 to 46.00
Rolling rails	63.00 to 64.00
Unstripped motor blocks	37.00 to 38.00

## Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	39.00 to 40.00
Elec. furnace, 3 ft & under	42.00 to 43.00
Machine shop turn.	23.00 to 24.00
Mixed bor. and short turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Clean cast chem. borings	28.00 to 29.00
No. 1 machinery cast.	42.00 to 43.00
Mixed cupola cast.	34.00 to 35.00
Heavy breakable cast.	42.00 to 43.00
Stove plate	42.00 to 43.00
Unstripped motor blocks	28.00 to 29.00

## New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$47.00 to \$48.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	35.00 to 36.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Clean cast chem. borings	30.00 to 31.00
No. 1 machinery cast.	46.00 to 47.00
Mixed yard cast.	41.00 to 42.00
Charging box cast.	46.00 to 47.00
Heavy breakable cast.	46.00 to 47.00
Unstripped motor blocks	33.00 to 34.00

## Birmingham

No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	28.00 to 29.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	28.00 to 29.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	27.00 to 28.00
Electric furnace bundles	45.50 to 46.50
Elec. furnace, 3 ft & under	43.50 to 44.50
Bar crops and plate	49.00 to 50.00
Structural and plate, 2 ft.	49.00 to 50.00
No. 1 RR. hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	50.00 to 51.00
Rails, 18 in. and under	58.00 to 59.00
Angles & splice bars	57.00 to 58.00
Rolling rails	41.00 to 42.00
No. 1 cupola cast.	49.00 to 50.00
Stove plate	47.00 to 48.00
Charging box cast.	34.00 to 35.00
Cast iron car heels	28.00 to 29.00
Unstripped motor blocks	40.00 to 41.00

## Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$41.00 to \$42.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	33.00 to 34.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	23.00 to 24.00
Low phos. 18 in. & under	51.00 to 52.00
Rails, random lengths	54.00 to 55.00
Rails, 18 in. and under	64.00 to 65.00
No. 1 cupola cast.	43.00 to 44.00
Hvy. breakable cast.	49.00 to 50.00
Drop broken cast.	53.00 to 54.00

## San Francisco

No. 1 hvy. melting	\$48.00
No. 2 hvy. melting	43.00
No. 1 dealer bundles	47.00
No. 2 bundles	35.00
Machine shop turn.	32.00
Cast iron borings	32.00
No. 1 RR. hvy. melting	48.00
No. 1 cupola cast.	55.00

## Los Angeles

No. 1 hvy. melting	\$46.00
No. 2 hvy. melting	43.00
No. 1 dealer bundles	45.00
No. 2 bundles	33.00
Machine shop turn.	32.00
Shoveling turnings	34.00
Cast iron borings	34.00
Elec. furn 1 ft and under (foundry)	57.00
No. 1 RR. hvy. melting	46.00
No. 1 cupola cast	\$52.00 to 53.00

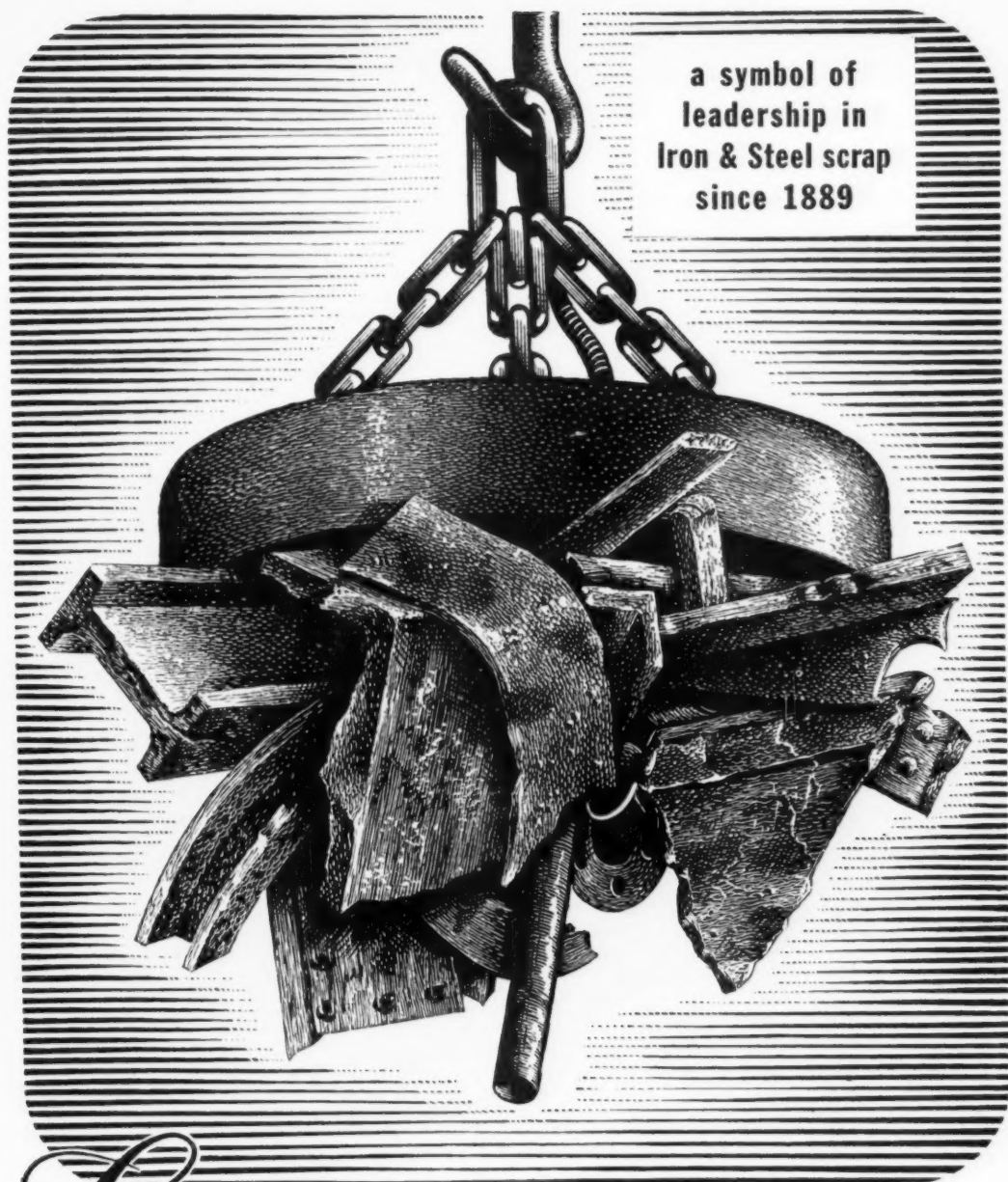
## Seattle

No. 1 hvy. melting	\$46.00
No. 2 hvy. melting	42.00
No. 2 bundles	\$28.00 to 30.00
No. 1 cupola cast.	47.00
Mixed yard cast.	47.00

## Hamilton, Ont.

No. 1 hvy. melting	\$43.00
No. 2 hvy. melting	38.00
No. 1 dealer bundles	43.00
No. 2 bundles	32.00
Mixed steel scrap	40.00
Busheling	34.00
Bush., new fact., prep'd	43.00
Bush., new fact., unprep'd	37.00
Machine shop turn.	22.00
Short steel turn.	24.00
Mix d bor. and turn.	24.00
Rails, rolling	54.00
Cast scrap	50.00





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**EXPORTS-IMPORTS LIVINGSTON & SOUTHARD, INC. 99 Park Ave., New York, N. Y. Cable Address: FORENTRACO**

# Expect Duty Boost On Lead, Zinc

**The White House long range mineral program is on its way to Congress.**

**Zinc, lead trade is betting it provides for a higher tariff.**

**But it won't be enough unless duty is at least tripled, say producers.**

■ The White House's long-range minerals program is on its way to Congress. It'll be made public before too much longer. But in the meantime lead and zinc men are speculating on what is in store for them.

It's a good bet the program will call for definite steps to firm up both markets. It looks like either (1) quotas on the amount of both metals which may be imported or, (2) increase in the tariff. The consensus in both metals looks for an increase in duty.

**Higher Tariff Good** — Lead and zinc producers and consumers generally think this is a good idea. But many say it won't have any basic effect on the amount of metal coming into the country. The reason: Duty won't increase enough to cut into foreign producers' profits in U. S. markets.

Current tariff on lead is 1 1/16¢ per lb. on pig, and 3/4¢ on ore per lb. of contained lead. To bring zinc into this country, it costs 7/10¢ per lb. for slab metal, and 6/10¢ per lb. of zinc contained in ore.

**Must Triple** — Most consumers and producers say both charges will probably be doubled. In order to discourage enough imports to firm the market duty would have to be

at least tripled, say many lead and zinc sales managers.

The possibility of quotas is mentally written off by many in the trade because they feel the State Dept. would be opposed and would be able to squelch any action in this direction. Because of certain reciprocal trade agreements, the trade expects some State Dept. resistance to import tariff hikes, but not enough to block the program.

**Concern For Allies**—The basis of State Dept. objection hinges on the fact that Canada, Mexico, Australia and some South American countries are our major source of imported lead and zinc. The executive branch considers it diplomatically unsound to reduce trade with these countries.

Rep. Edward Edmundson, (D., Okla.), already briefed on the program, says it will also contain provisions covering stockpiling and bartering. The outlook for barter: A change of emphasis. In the future the emphasis is likely to be placed on disposal of surplus farm products before they spoil, rather than on the material gained in exchange. What this would mean to lead and zinc markets is still hazy, but most producers are pessimistic.

## Aluminum

Reynolds Metals has dedicated new facilities for the production of wings and other components for military and commercial aircraft at its McCook, Ill., plant.

A 145-inch tapered rolling mill turns out tapered sheet in extra large widths and lengths. Twin fixed-bed, gantry-type skin millers

sculpture the plate to shape desired. For stable surfaces, a plate stretcher with a pull force of 16 million lbs. was installed.

Plates too large to be heat-treated in conventional vertical furnaces are handled in the industry's first horizontal plate heat treating unit.

## Brass

The Plumbing Brass Institute, an organization representing a portion of the brass industry hard hit by imports, has a plan to cure the situation.

Kenneth C. Bulkeley, PBI president, and president of American Sanitary Mfg. Co., says his group wants a quota established on imports of plumbing brass goods, pegged on five pct of American consumption in the previous year.

Mr. Bulkeley indicated that such a bill has already been drafted. It will be revised and finalized in line with member suggestions, then forwarded to a yet unnamed congressman for introduction in the House of Representatives.

Tin prices for the week (cents per lb): May 22—98.00; May 23—98.25; May 24—98.375; May 27—98.375; \* May 28—98.50.\*

\* Estimate

## Primary Prices

(cents per lb)	Current price	Last price	date of change
Aluminum ingot	27.10	25.90	8/10/58
Aluminum pig	25.00	24.00	8/10/58
Copper (E)	32.00	34.00	2/18/57
Copper (CS)	30.00	30.50	5/9/57
Copper (L)	32.00	34.00	2/19/57
Lead, St. L.	14.80	15.30	5/16/57
Lead, N. Y.	15.00	15.80	5/16/57
Magnesium ingot	38.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	84.50	12/6/58
Titanium sponge	250-275	270-300	12/4/58
Zinc, E. St. L.	11.80	12.00	5/13/57
Zinc, N. Y.	12.00	12.50	5/13/57

**ALUMINUM:** 99% ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig. Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see above; other primary prices, pg. 136.

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(Consult telephone directory in cities listed)

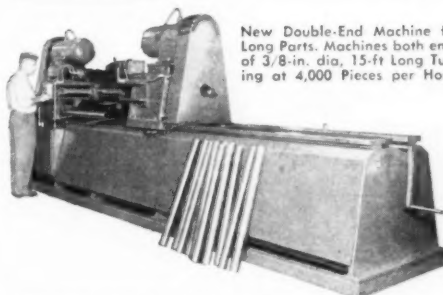
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51



## **AUTOMATED DOUBLE-END MACHINES REALLY CUT COSTS**



New Double-End Machine for Long Parts. Machines both ends of 3/8-in. dia, 15-ft Long Tubing at 4,000 Pieces per Hour.

Hill automated double-end machines produce precision parts at high production rates.

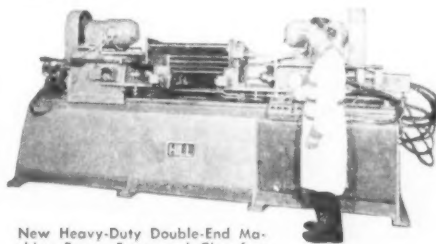
Providing maximum flexibility of part length and diameter, these versatile hydraulic-powered automatic machines utilize magazine feeds. Adjustments for part length changes can be made quickly without altering the magazines.

They will perform precision boring, threading, chamfering, facing and turning operations to 0.001-in. tolerances on solid or tubular round parts. Power heads that develop up to 20-tons thrust force have hollow quills that permit gun drilling at feeds up to 30-ipm with pressurized coolant.

With the head motors stopped, the machines will operate as forming presses that will expand, reduce, flare or bead both ends of tubular parts.

Accurate concentricity of machining and forming operations is assured by boring chucking surfaces with the machine heads.

Send part specifications and production requirements for prompt quotations on cost-saving machines.



New Heavy-Duty Double-End Machine Bores, Faces and Chamfers 30-in. Long, 2-in. dia Steering Columns at 950 Pieces per Hour.

Write for this catalog giving complete information on Hill specialized hydraulic bending machines, double-end machines and extrusion equipment.



**WALTER P. HILL, INC.**

22183 Telegraph Road • Detroit 19, Michigan

# NONFERROUS PRICES (Effective May 27, 1957)

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

**ALUMINUM**  
(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish) and Plate  
("P" temper except 6061-0)

Alloy	.002	.001	.198-.249	.300-3
1800, 1100, 3003...	44.3	42.1	40.9	40.9
5052...	51.8	46.8	45.1	43.9
6061-0...	48.9	44.8	42.8	42.0

## Extruded Solid Shapes

Factor	6062 T-3	6062 T-4
6-8...	42.7-44.4	57.0-61.1
12-14...	43.4-44.8	58.4-63.7
24-36...	46.4-48.9	65.7-72.1
36-38...	44.8-55.4	91.8-94.0

## Screw Machine Stock—2011-T-3

Size	3/4	5/8	1/2	1/4-1/8
Price.....	59.7	58.8	57.4	55.9

## Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length	72	96	120	144
.019 gage.....	\$1.353	\$1.808	\$2.264	\$2.704
.024 gage.....	1.686	2.262	2.818	3.378

## MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

## Sheet and Plate

Type	Gage	.250-3.00	.250-2.00	.188	.081	.063
AS11B Hand, Grade.....			67.9	69.0	77.9	108.1
AS11B Spec.....			93.3	95.7	108.7	171.3
Tread Plate.....			70.6	71.7		
Tooling Plate.....			78.0			

## Extruded Shapes

Factor	6-8	12-14	24-36	36-38
Comm. Grade. (AS11C).....	60.6	70.7	75.6	89.9
Spec. Grade... (AS11B).....	84.6	85.7	90.6	104.9

## Alloy Ingot

AS11B (Die Casting)..... 37.25 (delivered)  
AS11A, AS22A, AS20C (Sand Casting) 40.75 (Veloaco, Tex.)

## NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel Monel	Inconel
Sheet, CR.....	126	128
Strip, CR.....	124	128
Rod, bar, HR.....	107	89
Angles, HR.....	107	89
Plates, HR.....	120	105
Seamless tube.....	157	129
Shot, blocks.....		87

## COPPER, BRASS, BRONZE

(Freight included on 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper.....	54.13	51.36	54.32	
Brass, 70/30.....	47.02	47.56	46.96	49.93
Brass, Low.....	49.80	50.44	49.84	52.71
Brass, R L.....	50.92	51.46	50.86	53.73
Brass, Naval.....	51.10	45.41	54.51	
Muntz Metal.....	49.19	45.00		
Comm. Br.....	52.48	53.02	52.42	55.04
Mang. Br.....	54.84	48.94		
Phos. Br. 5%.....	73.17	73.67		

Free Cutting Brass Rod..... 35.16

## TITANIUM

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, \$11.00-\$12.10; alloy, \$14.75; Plate, HR, commercially pure, \$9.25-\$9.75; alloy, \$11.25; Wire, rolled and or drawn, commercially pure, \$8.50-\$9.00; alloy, \$11.00; Bar, HR or forged, commercially pure, \$7.10-\$7.35; alloy, \$7.10-\$7.30; billets, HR, commercially pure, \$6.85-\$7.10; alloy, \$6.85-\$7.05.

## PRIMARY METAL

(Cents per lb, unless otherwise noted)

Antimony, American, Laredo, Tex... 33.50  
Beryllium aluminum 5% Be, Dollar per lb contained Be..... \$74.75  
Beryllium copper, per lb contain'd Be..... \$43.00  
Beryllium 99% lump or beads, f.o.b. Cleveland, Reading..... \$71.50  
Bismuth, ton lots..... \$ 2.25  
Cadmium, delf..... \$ 1.70  
Calcium, 99.95%, small lots..... \$ 4.55  
Chromium, 99.8% metallic basis..... \$ 1.31  
Cobalt, 97-99% (per lb)..... \$2.00 to \$2.07  
Germanium, per gm, f.o.b. Miami, Okla., refined..... \$48.50-\$53.50  
Gold, U. S. Treas., per troy oz..... \$35.00  
Indium, 99.9% dollars per troy oz..... \$ 2.25  
Iridium, dollars per troy oz..... \$90 to \$100  
Lithium, 98%..... \$11.00 to \$14.00  
Magnesium, sticks, 100 to 500 lb..... 59.00  
Mercury, dollars per 76-lb flask, f.o.b. New York..... \$255 to \$257  
Nickel oxide sinter at Copper Cliff, Ont., contained nickel..... 71.25  
Palladium, dollars per troy oz..... \$23 to \$24  
Platinum, dollars per troy oz..... \$92 to \$95  
Rhodium..... \$120.00 to \$125.00  
Silver ingots (c per troy oz.)..... \$1.375  
Thorium, per kg..... \$43.00  
Uranium, normal per kg..... \$40.00  
Vanadium..... \$ 3.45  
Zirconium sponge..... \$10.00

## REMETLED METALS

### Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot  
No. 115..... 30.50  
No. 120..... 29.25  
No. 123..... 27.50  
80-10-10 ingot  
No. 305..... 34.50  
No. 315..... 32.50  
88-10-2 ingot  
No. 210..... 42.25  
No. 215..... 38.50  
No. 245..... 34.50  
Yellow ingot  
No. 405..... 25.00  
Manganese bronze  
No. 421..... 28.00

### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper max..... 24.00-24.75  
0.60 copper max..... 23.75-24.50  
Piston alloys (No. 122 type)..... 23.00-24.50  
No. 12 alum. (No. 2 grade)..... 21.00-22.00  
108 alloy..... 21.50-22.00  
195 alloy..... 23.75-25.00  
13 alloy (0.60 copper max.)..... 23.75-24.50  
AXS-679..... 21.50-22.00

Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97%..... 22.00-22.76  
Grade 2—92-95%..... 21.00-21.50  
Grade 3—90-92%..... 20.00-20.56  
Grade 4—85-90%..... 18.75-19.56

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper.....	28	27 1/2
Yellow brass.....	21 1/2	19 1/2
Red brass.....	24 1/2	24
Comm. bronze.....	25 1/2	25
Mang. bronze.....	19 1/2	19
Yellow brass rod ends.....	21	

### Customs Smelter Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire..... 26  
No. 2 copper wire..... 24 1/2  
Light copper..... 22  
Refinery brass..... 23 1/2  
Copper bearing material..... 23 1/2  
Dry copper content.....

### Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire..... 26  
No. 2 copper wire..... 24 1/2  
Light copper..... 22  
No. 1 composition..... 23  
No. 1 comp. turnings..... 22 1/2  
Hvy. yellow brass solids..... 17  
Brass pipe..... 19  
Radiators..... 18

Mixed old cast..... 13 1/2—14 1/2  
Mixed new clips..... 16—16 1/2  
Mixed turnings, dry..... 14—15

### Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

**Copper and Brass**  
No. 1 copper wire..... 23—23 1/2  
No. 2 copper wire..... 21 1/2—22  
Light copper..... 19 1/2—20 1/2  
Auto radiators (unsweated)..... 20 1/2—21  
No. 1 composition..... 20—20 1/2  
Cocks and faucets..... 16 1/2—17  
Clean heavy yellow brass..... 14—14 1/2  
Brass pipe..... 17—17 1/2  
New soft brass clippings..... 18—18 1/2  
No. 1 brass rod turnings..... 15 1/2—16 1/2

### Aluminum

Alum. pistons and struts..... 5 1/2—6  
Aluminum crankcases..... 10 1/2—11  
1100 (2S) aluminum clippings..... 13 1/2—14  
Old sheet and ut-nails..... 10 1/2—11  
Borings and turnings..... 6 1/2—7  
Industrial castings..... 10 1/2—11  
2024 (24S) Clippings..... 12—12 1/2

### Zinc

New zinc clippings..... 4—4 1/2  
Old zinc..... 3—3 1/2  
Zinc routings..... 1 1/2—2  
Old die cast scrap..... 1 1/2—2

### Nickel and Monel

Pure nickel clippings..... 85-90  
Clean nickel turnings..... 70-75  
Nickel anodes..... 85-90  
Nickel rod ends..... 85-90  
New Monel clippings..... 45-48  
Clean Monel turnings..... 35-40  
Old sheet Monel..... 44-45  
Nickel silver clippings, mixed..... 21  
Nickel silver turnings, mixed..... 18

### Lead

Soft scrap lead..... 10 1/2—11  
Battery plates (dry)..... 5 1/2—6  
Batteries, acid free..... 2 1/2—3 1/2

### Miscellaneous

Block tin..... 75—76  
No. 1 pewter..... 59—60  
Auto babblit..... 39—40  
Mixed common babblit..... 11 1/2—12  
Solder joints..... 17—17 1/2  
Siphon tops..... 42  
Small foundry type..... 13 1/2—13 1/2  
Monotype..... 13 1/2—13 1/2  
Lino. and stereotype..... 12 1/2—12 1/2  
Electrotype..... 11 1/2—11 1/2  
Hand picked type shells..... 8 1/2—8 1/2  
Lino. and stereo. dross..... 4—4 1/2  
Electro. dross..... 3 1/2—3 1/2



## IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b., mill in cents per lb., unless otherwise noted. Extras apply.

**STEEL PRICES**

(Effective May 27, 1957)

	BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
	Carbon Revolving Net Ton	Carbon Faring Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.		\$107.00 B3		5.05 B3	7.40 B3	5.05 B3						
	Buffalo, N. Y.	\$74.00 B3, R3	\$91.50 B3, R3	\$107.00 B3, R3	5.90 B3	5.05 B3	7.40 B3	5.05 B3	4.675 B3, R3	6.85 R7	6.95 B3		
	Claymont, Del.												
	Harrison, N. J.												14.55 C11
	Conschocken, Pa.		\$96.50 A2	\$114.00 A2				4.725 A2	6.90 A2	6.95 A2			
	New Bedford, Mass.								7.30 R6				
	Johantown, Pa.	\$74.00 B3	\$91.50 B3	\$107.00 B3		5.05 B3	7.40 B3						
	Boston, Mass.								7.00 T8				14.90 T8
	New Haven, Conn.								7.20 D1				
	Baltimore, Md.								6.85 T8				
	Phoenixville, Pa.				5.85 P2		5.85 P2						
	Sparrows Pt., Md.							4.675 B3		6.95 B3			
	Bridgeport, Wallingford, Conn.	\$79.00 N8	\$96.50 N8	\$107.00 N8					7.30 W1 6.95 N8				
	Pawtucket, R. I. Worcester, Mass.								7.48 A5,N7				14.90 N7
MIDDLE WEST	Alton, Ill.							4.875 L1					
	Ashland, Ky.							4.675 A7					
	Canton-Maxwell, Dover, Ohio		\$94.00 R3	\$107.00 R3, T3					6.85 G4		10.10 G4		14.55 G4
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	\$74.00 U1, R3	\$91.50 U1, R3,W8	\$107.00 U1, R3,W8	5.90 U1	5.00 U1,W8 5.00 P13	7.35 U1,Y1 6.00 W8	5.00 U1	4.675 N4 4.675 A1	6.95 A1,T8 6.95 M8		7.75 W8, S9	14.55 A1, S9,T8
	Cleveland, Ohio								6.85 A5,J3			7.75 J3	
	Detroit, Mich.			\$107.00 R5				4.775 G3, M2	6.95 M2,G3, D2,P11	7.05 G3	10.10 G3, D2	7.75 G3	
	Anderson, Ind.								6.85 G4		10.10 G4		
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana	\$74.00 U1	\$91.50 U1	\$107.00 U1, Y1	5.90 J3	5.00 U1	7.35 U1,J3	5.25 J3	4.675 U1, J3,Y1	6.85 Y1	6.95 U1, J3,Y1	10.20 Y1	7.75 U1, Y1
	Sterling, Ill.	\$74.00 N4				5.00 N4		4.775 N4					
	Indianapolis, Ind.								7.00 C5				
	Newport, Ky.											7.75 A9	
	Middletown, Ohio												
WEST	Niles, Warren, Ohio Sharon, Pa.		\$91.50 S1, C10	\$107.00 S1, C10				4.675 S1, R3	6.85 T4	6.95 S1, R3	10.00 S1, R3	7.75 S1	14.55 S1
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$74.00 U1	\$91.50 U1, C11	\$107.00 U1, C11	5.90 U1	5.00 U1, J3	7.35 U1, J3	5.00 U1	4.675 P6	5.750 P6 6.85 J5,B4, S7		7.75 S9	14.55 S9
	Portsmouth, Ohio												
	Weirton, Wheeling, Fallshee, W. Va.					5.00 W3		4.675 W3	6.85 W3,F3	6.95 W3	9.85 W3		
	Youngstown, Ohio	\$74.00 R3	\$91.50 Y1, C10	\$107.00 Y1			7.35 Y1		6.85 Y1,C5	6.95 U1, Y1	10.20 Y1	7.75 U1, Y1	
	Fontana, Cal.	\$83.50 K1	\$101.00 K1	\$128.00 K1		5.75 K1	8.10 K1	5.90 K1	5.525 K1	8.70 K1			
	Geneva, Utah		\$91.50 C7			5.00 C7	7.35 C7						
	Kansas City, Mo.					5.10 S2	7.45 S2		4.925 S2		7.20 S2		
	Los Angeles, Torrance, Cal.		\$101.00 B2	\$127.00 B2		5.70 C7, B2	8.05 b?		5.425 B2, C7	8.90 C1		8.95 B2	
	Minnequa, Colo.					5.30 C6			5.775 C6				
	Portland, Ore.					5.75 O2							
	San Francisco, Niles, Pittsburg, Cal.		\$101.00 B2			5.65 B2	8.00 B2		5.425 C7,B2				
	Seattle, Wash.		\$105.00 B2			5.75 B2	8.10 B2		5.675 B2				
SOUTH	Atlanta, Ga.					5.20 A8			4.875 A8				
	Fairfield, Ala. City, Birmingham, Ala.	\$74.00 T2	\$91.50 T2			5.00 T2,R3 5.00 C16	7.35 T2		4.675 T2,R3 4.975 C16 4.675 C16		6.95 T2		
	Houston, Lone Star, Texas	\$88.00 L3	\$96.50 S2	\$112.00 S2		5.10 S2	7.45 S2		4.925 S2		7.20 S2		

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.											
STEEL PRICES		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
(Effective May 27, 1957)		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized	Enamel-ing	Long Tonne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.	Cokes* 1.25-lb. base box	Electro* #.25 lb. base box	Holloware Enameling 29 ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.675 B1	5.75 B3				6.90 B3	8.525 B3		5.80 W6	† Special coated mfg. terms deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct \$2.20 from 1.25-lb. coke base box. * COKE: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add \$1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	4.725 A2	5.80 A2				6.95 A2						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									5.80 B3			
	Fairless, Pa.	4.725 U1	5.80 U1				6.95 U1	8.575 U1			\$10.15 U1	\$8.85 U1	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.675 B3	5.75 B3	6.30 B3			6.90 B3	8.575 B3	9.275 B3	5.90 B3	\$10.15 B3	\$9.85 B3	
MIDDLE WEST	Worcester, Mass.									6.10 A5			
	Trenton, N. J.												
	Alton, Ill.									6.00 L1			
	Ashland, Ky.	4.675 A7		6.30 A7	6.325 A7								
	Canton-Massillon, Dover, Ohio			6.30 R3, R1									
	Chicago, Joliet, Ill.	4.675 W8, A1					6.90 U1			5.80 A2	5.80 A5, R3, N4, W8, K2	5.90 N4, K2	
	Sterling, Ill.												
	Cleveland, Ohio	4.675 J3, R3	5.75 J3, R3	6.325 R3			6.90 R3	8.525 R3, J3		5.80 A5			
	Detroit, Mich.	4.775 G3, M2	5.85 G3, 5.75 M2				7.00 G2	8.625 G3					
	Newport, Ky.	4.675 A9	5.75 A9										
	Gary, Ind. Harbor, Indiana	4.675 U1, I3, Y1	5.75 U1, I3, Y1	6.30 U1, I3	6.325 U1, I3, Y1	6.70 U1	6.90 U1, Y1, I3	8.525 U1, Y1		5.80 Y1	\$10.05 U1, Y1	\$8.75 J3, U1, Y1	7.50 U1, Y1
WEST	Granite City, Ill.	4.675 G2	5.95 G2	6.30 G2	6.525 G2							\$8.85 G2	7.60 G2
	Kokomo, Ind.			6.40 C9						5.90 C9			
	Mansfield, Ohio		5.75 E2			6.70 E2							
	Middletown, Ohio		5.75 A7	6.30 A7	6.325 A7	6.70 A7							
	Niles, Warren, Ohio Sharon, Pa.	4.675 S1, R3, N3	5.75 R3	6.30 R3	6.325 N3	6.70 N3	6.90 S1, R1	8.525 S1, R3				\$8.75 R3	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.675 U1, J3, P6	5.75 U1, J3, P6	6.30 U1, J3	6.325 U1		6.90 U1, J3, R3	8.525 U1, J3	9.275 U1	5.80 A5, P6, J3	\$10.05 J3, U1	\$8.75 U1, J3	7.50 U1, J3
	Portsmouth, Ohio	4.675 P7	5.75 P7							5.80 P7			
	Wairten, Wheeling, Follansbee, W. Va.	4.675 W3, W5	5.75 W3, W5, F3	6.30 W3, W5		6.70 W3, W5	6.90 W3	8.525 W3			\$10.05 W5, W3	\$8.75 W5, W3	7.50 W5
	Youngstown, Ohio	4.675 U1, Y1	5.75 Y1	6.325 Y1			6.90 Y1	8.525 Y1		5.80 Y1			
	Fontana, Cal.	5.525 K1	7.00 K1				7.75 A1	9.775 A1			\$10.80 K1	\$9.50 K1	
	Geneva, Utah	4.775 C7											
SOUTH	Kansas City, Mo.									6.05 S2			
	Los Angeles, Torrance, Cal.									6.60 B2			
	Minneapolis, Colo.									6.05 C6			
	San Francisco, Niles, Pittsburg, Cal.	5.375 C7	6.70 C7	7.05 C7						6.60 C7	\$10.80 C7	\$9.50 C7	
	Seattle, Wash.												
	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	4.675 T2, R1	5.75 T2	6.30 T2, R3						5.80 T2, R3	\$10.15 T2	\$8.85 T2	
	Houston, Tex.									6.05 S2			

IRON AGE		<i>Italics identify producers listed in key at end of table. Base prices, f.o.w. mill, in cents per lb., unless otherwise noted. Extras apply</i>										
<b>STEEL PRICES</b>		<b>BARS</b>						<b>PLATES</b>				<b>WIRE</b>
<i>(Effective May 27, 1957)</i>		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Flame Plate	Alloy	Hi Str. Low Alloy	Mir'a. Bright
EAST	Bethlehem, Pa.				6.125 B3	8.325 B3	7.40 B3					
	Buffalo, N. Y.	5.075 B3,R3	5.075 B3,R3	6.90 B5	6.125 B3,R3	8.325 B5,B3	7.40 B3	4.85 B3				7.20 W6
	Claymont, Del.							5.70 C4		6.85 C4	7.55 C4	
	Coatesville, Pa.							5.25 L4		6.85 L4	7.55 L4	
	Conschohocken, Pa.							4.95 A2	5.925 A2	6.85 A2	7.25 A2	
	Harriaburg, Pa.							5.90 P2	6.275 P2			
	Hartford, Conn.			7.35 R3		8.625 R3	7.40 B3					
	Johnstown, Pa.	5.075 B3	5.075 B3		6.125 B3			4.85 B3		6.85 B3	7.25 B3	7.10 B3
	Fairless, Pa.	5.225 U1	5.225 U1		6.275 U1							
	Newark, N. J.			7.30 W10		8.56 W10						
	Camden, N. J.			7.30 P10		8.50 P10						
	Bridgeport, Conn. Putnam, Conn.	5.30 N8	5.30 N8	7.20 N8 7.40 W10	6.20 N8	8.475 N8	7.50 N8					
	Sparrows Pt., Md.		5.075 B3					4.85 B3		6.85 B3	6.85 B3	7.30 B3
MIDDLE WEST	Palmer, Worcester, Readville, Mass. Milton, Mass.	5.225 M7	5.225 M7	7.40 B5,C14		8.625 A5 8.625 B5						7.50 A5,W6 9.025 T8
	Spring City, Pa.			7.30 K4		8.50 K4						
	Alton, Ill.	5.275 L1										7.40 L1
	Ashland, Newport, Ky.							4.85 A7,A9		6.85 A9		
	Canton, Massillon, Ohio			6.85 R3,R2	6.125 R3,T5	8.325 R3,R2,T5						
	Chicago, Joliet, Ill.	5.075 U1,R3,W8,N4 5.075 P13	5.075 U1,R3,N4 5.075 P13	6.85 A5,B5,W10,L2 W8,N9	6.125 U1,R3,W8	8.325 A5,B5,W8,L2,N9,W10	5.075 W8 7.425 U1	4.85 U1,I3,W8,A1	5.925 U1	6.85 U1,W8	7.25 U1	7.20 A5,K2 R3,N4,W7
	Cleveland, Ohio	5.075 R3	5.075 R3	6.85 A5,C13		8.325 A5,C13	7.425 R3	4.95 J3,R3	5.925 J3		7.25 J3,R3	7.20 A5,C13
	Detroit, Mich.	5.175 G3	5.425 G3	7.05 B5,P8 7.10 P3 6.85 R5	6.225 G3	8.525 B5,P3,P8 8.325 R5	7.525 G3	4.95 G3		6.90 G3		
	Duluth Minn.											7.20 A5
	Gary, Ind. Harbor, Crawfordville	5.075 U1,I3,Y1	5.075 U1,I3,Y1	6.85 R3,M5	6.125 U1,I3,Y1	8.325 R3,M4	7.425 U1,I3,Y1	4.85 U1,I3,Y1	5.925 I3	6.85 U1,Y1	7.25 U1,Y1	7.30 M4
	Granite City, Ill.							5.05 G2				
	Kokomo, Ind.											7.30 C9
	Sterling, Ill.	5.175 N4	5.175 N4					4.85 N4				7.30 K2
WEST	Niles, Warren, Ohio Sharon, Pa.			6.85 C10	6.125 C10,S1	8.325 C10	7.425 S1	4.85 S1,R3		6.85 S1	7.25 S1,R3	
	Pittsburgh, Pa. Midland, Pa.	5.075 U1,C11,J3	5.075 U1,J3	6.85 A5,C8,J3,R3,S9,B4,W10,C11	6.125 U1,C11,J3	8.325 A5,R3,S9,C8,W10,C11	7.425 U1,J3	4.85 U1,J3	5.925 U1	6.85 U1,J3	7.25 U1,J3	7.20 A5,J3,P6
	Portsmouth, Ohio											7.20 P7
	Weirton, Wheeling, Follansbee, W. Va.							4.85 W5				
	Youngstown, Ohio	5.075 U1,Y1,R3	5.075 U1,Y1,R3	6.85 U1,Y1,F2	6.125 U1,Y1	8.325 Y1,F2	7.425 U1,Y1	4.85 U1,Y1,R3		6.85 Y1	7.25 Y1 7.25 U1	7.20 Y1
	Emeryville, Cal.	5.825 J5	5.825 J5									
	Fontana, Cal.	5.775 K1	5.775 K1		7.175 K1		8.125 K1	5.60 K1		7.60 K1	8.00 K1	
	Geneva, Utah							4.85 C7			7.25 C7	
	Kansas City, Mo.	5.325 S2	5.325 S2		6.375 S2		7.675 S2					7.45 S2
	Los Angeles, Torrance, Cal.	5.775 C7,B2	5.775 C7,B2	8.30 R3,P14	7.175 B2	10.20 P14	8.125 B2					8.15 B2
	Minnequa, Colo.	5.525 C6	5.525 C6					5.70 C6				7.45 C6
	Portland, Ore.	5.825 O2	5.825 O2									
	San Francisco, Niles, Pittsburg, Cal.	5.775 C7 5.825 B2 6.025 P9	5.775 C7 5.825 B2 6.025 P9				8.175 B2					8.15 C7,C6
	Seattle, Wash.	5.825 B2,N6	5.825 B2				8.175 B2	5.75 B2		7.75 B2	8.15 B2	
SOUTH	Atlanta, Ga.	5.275 A8	5.275 A8									7.40 A8
	Fairfield, Ala. City, Birmingham, Ala.	5.075 T2,R3 5.075 C16	5.075 T2,R3 5.075 C16	7.45 C16			7.425 T2	4.85 T2,R3			7.25 T2	7.20 T2,R3
	Houston, Ft. Worth, Lone Star, Tex.	5.325 S2	5.325 S2		6.375 S2		7.675 S2	4.95 S2 5.20 L3		6.95 S2	7.35 S2	7.45 S2

† Merchant Quality—Specialty Quality .35¢ higher.

# STEEL PRICES

(Effective May 27, 1957)

## Key to Steel Producers

### With Principal Offices

- A1 Acme Steel Co., Chicago  
A2 Alan Wood Steel Co., Conshohocken, Pa.  
A3 Allegheny Ludlum Steel Corp., Pittsburgh  
A4 American Cladmetals Co., Carnegie, Pa.  
A5 American Steel & Wire Div., Cleveland  
A6 Angel Nail & Chaplet Co., Cleveland  
A7 Armco Steel Corp., Middletown, Ohio  
A8 Atlantic Steel Co., Atlanta, Ga.  
A9 Acme-Newport Steel Co., Newport, Ky.  
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.  
B2 Bethlehem Pacific Coast Steel Corp., San Francisco  
B3 Bethlehem Steel Co., Bethlehem, Pa.  
B4 Blair Strip Steel Co., New Castle, Pa.  
B5 Bliss & Laughlin, Inc., Harvey, Ill.  
B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.  
C1 Calatrail Steel Corp., Los Angeles  
C2 Carpenter Steel Co., Reading, Pa.  
C3 Central Iron & Steel Co., Harrisburg, Pa.  
C4 Claymont Products Dept., Claymont, Del.  
C5 Cold Metals Products Co., Youngstown, O.  
C6 Colorado Fuel & Iron Corp., Denver  
C7 Columbia Geneva Steel Div., San Francisco  
C8 Columbia Steel & Shifting Co., Pittsburgh  
C9 Continental Steel Corp., Kokomo, Ind.  
C10 Copperweld Steel Co., Pittsburgh, Pa.  
C11 Crucible Steel Co. of America, Pittsburgh  
C12 Cumberland Steel Co., Cumberland, Md.  
C13 Cuyahoga Steel & Wire Co., Cleveland  
C14 Compressed Steel Shifting Co., Readville, Mass.  
C15 G. O. Carlson, Inc., Thorndale, Pa.  
C16 Connors Steel Div., Birmingham  
C17 Chester Blast Furnace, Inc., Chester, Pa.  
D1 Detroit Steel Corp., Detroit  
D2 Dearborn Div., Sharon Steel Corp.  
D3 Driver Harris Co., Harrison, N. J.  
D4 Dickson Weatherproof Nail Co., Evanston, Ill.  
E1 Eastern Stainless Steel Corp., Baltimore  
E2 Empire Steel Co., Mansfield, O.  
F1 Firth Sterling, Inc., McKeesport, Pa.  
F2 Fitzsimons Steel Corp., Youngstown

- F3 Follansbee Steel Corp., Follansbee, W. Va.  
G2 Granite City Steel Co., Granite City, Ill.  
G3 Great Lakes Steel Corp., Detroit  
G4 Greer Steel Co., Dover, O.  
H1 Hanna Furnace Corp., Detroit  
H2 Ingersoll Steel Div., Chicago  
H3 Inland Steel Co., Chicago  
H4 Interlake Iron Corp., Cleveland  
J1 Jackson Iron & Steel Co., Jackson, O.  
J2 Jessop Steel Corp., Washington, Pa.  
J3 Jones & Laughlin Steel Corp., Pittsburgh  
J4 Joslyn Mfg. & Supply Co., Chicago  
J5 Judson Steel Corp., Emeryville, Calif.  
K1 Kaiser Steel Corp., Fontana, Cal.  
K2 Keystone Steel & Wire Co., Peoria  
K3 Koppers Co., Granite City, Ill.  
K4 Keystone Drawn Steel Co., Spring City, Pa.  
L1 Laclede Steel Co., St. Louis  
L2 La Salle Steel Co., Chicago  
L3 Lone Star Steel Co., Dallas  
L4 Lukens Steel Co., Coatesville, Pa.  
M1 Mahoning Valley Steel Co., Niles, O.  
M2 McLouth Steel Corp., Detroit  
M3 Mercer Tube & Mfg. Co., Sharon, Pa.  
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.  
M5 Monarch Steel Div., Hammond, Ind.  
M6 Mystic Iron Works, Everett, Mass.  
M7 Milton Steel Products Div., Milton, Pa.  
M8 Mill Strip Products Co., Evanston, Ill.  
N1 National Supply Co., Pittsburgh  
N2 National Tube Div., Pittsburgh  
N3 Niles Rolling Mill Div., Niles, O.  
N4 Northwestern Steel & Wire Co., Sterling, Ill.  
N6 Northwest Steel Rolling Mills, Seattle  
N7 Newman Crosby Steel Co., Pawtucket, R. I.  
N8 Northeastern Steel Corp., Bridgeport, Conn.  
N9 Nelson Steel & Wire Co.  
O1 Oliver Iron & Steel Co., Pittsburgh  
O2 Oregon Steel Mills, Portland  
P1 Page Steel & Wire Div., Monessen, Pa.  
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.  
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.  
P4 Pittsburgh Coke & Chemical Co., Pittsburgh  
P5 Pittsburgh Screw & Bolt Co., Pittsburgh  
P6 Pittsburgh Steel Co., Pittsburgh  
P7 Portsmouth Div., Detroit Steel Corp., Detroit  
P8 Plymouth Steel Co., Detroit  
P9 Pacific States Steel Co., Niles, Cal.  
P10 Precision Drawn Steel Co., Camden, N. J.  
P11 Production Steel Strip Corp., Detroit  
P13 Phoenix Mfg. Co., Joliet, Ill.  
P14 Pacific Tube Co.  
R1 Reeves Steel & Mfg. Co., Dover, O.  
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.  
R3 Republic Steel Corp., Cleveland  
R4 Roebbing Sons Co., John A., Trenton, N. J.  
R5 Rotary Electric Steel Co., Detroit  
R6 Rodney Metals, Inc., New Bedford, Mass.  
R7 Rome Strip Steel Co., Rome, N. Y.  
S1 Sharon Steel Corp., Sharon, Pa.  
S2 Sheffield Steel Div., Kansas City  
S3 Shenango Furnace Co., Pittsburgh  
S4 Simonds Saw and Steel Co., Fitchburg, Mass.  
S5 Sweet's Steel Co., Williamsport, Pa.  
S6 Standard Forging Corp., Chicago  
S7 Stanley Works, New Britain, Conn.  
S8 Superior Drawn Steel Co., Monaca, Pa.  
S9 Superior Steel Corp., Carnegie, Pa.  
S10 Seneca Steel Service, Buffalo  
T1 Tonawanda Iron Div., N. Tonawanda, N. Y.  
T2 Tennessee Coal & Iron Div., Fairfield  
T3 Tennessee Products & Chem. Corp., Nashville  
T4 Thomas Strip Div., Warren, O.  
T5 Timken Steel & Tube Div., Canton, O.  
T7 Texas Steel Co., Fort Worth  
T8 Thompson Wire Co., Boston  
U1 United States Steel Corp., Pittsburgh  
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.  
U3 Ulbrich Stainless Steels, Wallingford, Conn.  
U4 U. S. Pipe & Foundry Co., Birmingham  
W1 Wallingford Steel Co., Wallingford, Conn.  
W2 Washington Steel Corp., Washington, Pa.  
W3 Weirton Steel Co., Weirton, W. Va.  
W4 Wheatland Tube Co., Wheatland, Pa.  
W5 Wheeling Steel Corp., Wheeling, W. Va.  
W6 Wickwire Spencer Steel Div., Buffalo  
W7 Wilson Steel & Wire Co., Chicago  
W8 Wisconsin Steel Div., S. Chicago, Ill.  
W9 Woodward Iron Co., Woodward, Ala.  
W10 Wyckoff Steel Co., Pittsburgh  
W12 Wallace Barnes Steel Div., Bristol, Conn.  
Y1 Youngstown Sheet & Tube Co., Youngstown, O.

## PIPE AND TUBING

Base discounts (per cent) f.o.b. mills. Base price about \$200 per net ton.

STANDARD T. & C.	BUTTWELD															SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.		
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	
Sparrows Pt. B3	7.25	+8.00	10.25	+4.00	13.75	0.50	16.25	1.25	16.75	2.25	17.25	2.75	18.75	2.50									
Youngstown R3	9.25	+10.00	12.25	+6.00	15.75	+1.50	18.25	0.25	18.75	1.25	19.25	1.75	20.75	2.50									
Fontana K1	+3.75	+19.00	+0.75	+15.00	2.75	+10.50	5.25	+9.75	5.75	+8.75	6.25	+8.25	7.75	+8.50									
Pittsburgh J3	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	5.25	5.25	+20.25	1.25	+16.50	3.75	+13.00	5.25	+11.50	
Alton, Ill. L1	7.25	+8.00	10.25	+4.00	13.75	0.50	16.25	1.25	16.75	2.25	17.25	2.75	18.75	2.50									
Sharon M1	9.25	+10.00	12.25	+2.00	15.75	+1.50	18.25	0.25	18.75	1.25	19.25	1.75	20.75	2.50									
Fairless N2	7.25	+8.00	10.25	+4.00	13.75	0.50	16.25	1.25	16.75	2.25	17.25	2.75	18.75	2.50									
Pittsburgh N1	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	5.25	5.25	+20.25	1.25	+16.50	3.75	+13.00	5.25	+11.50	
Wheeling W5	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	5.25									
Wheatland W4	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	5.25									
Youngstown Y1	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	5.25	5.25	+20.25	1.25	+16.50	3.75	+13.00	5.25	+11.50	
Indiana Harbor Y1	8.25	+9.00	13.25	+2.00	14.75	1.50	17.25	2.25	17.75	3.25	18.25	3.75	19.75	4.25									
Lorain N2	9.25	+6.00	12.25	+2.00	15.75	2.50	18.25	3.25	18.75	4.25	19.25	4.75	20.75	5.25	5.25	+20.25	1.25	+16.50	3.75	+13.00	5.25	+11.50	
EXTRA STRONG PLAIN ENDS																							
Sparrows Pt. B3	11.75	+2.00	15.75	2.00	18.75	6.50	19.25	5.25	19.75	6.25	20.25	6.75	20.75	5.50									
Youngstown R3	13.75	+4.00	17.75	list	20.75	4.50	21.25	4.25	21.75	5.25	22.25	5.75	22.75	5.50									
Fairless N2	11.75	+2.00	15.75	2.00	18.75	6.50	19.25	5.25	19.75	6.25	20.25	6.75	20.75	5.50									
Fontana K1	0.75		4.75		7.75		8.25		8.75		9.25		9.75										
Pittsburgh J3	13.75	+2.00	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+10.50	11.25	+5.50	
Alton, Ill. L1	11.75	+2.00	15.75	2.00	18.75	6.50	19.25	5.25	19.75	6.25	20.25	6.75	20.75	5.50									
Sharon M1	13.75	+4.00	17.75	list	20.75	4.50	21.25	4.25	21.75	5.25	22.25	5.75	22.75	5.50									
Pittsburgh N1	13.75	+2.00	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+10.50	11.25	+5.50	
Wheeling W5	13.75	+2.00	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50									
Wheatland W4	13.75	+2.00	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50									
Youngstown Y1	13.75	+2.00	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+10.50	11.25	+5.50	
Indiana Harbor Y1	12.75	+1.00	16.75	3.00	19.75	7.50	20.25	6.25	20.75	7.25	21.25	7.75	21.75	6.50									
Lorain N2	13.75	+2.00	17.75	4.00	20.75	8.50	21.25	7.25	21.75	8.25	22.25	8.75	22.75	7.50	3.75	+17.75	3.75	+12.00	6.25	+10.50	11.25	+5.50	

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 5 1/2 pt. higher discount. Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11 1/2¢ per lb.



## TOOL STEEL

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	\$1.68	T-1
18	4	1	—	5	2.385	T-4
18	4	1	—	—	1.185	T-2
18	4	1.5	8	—	1.04	M-1
4	4	1	6	—	1.43	M-3
6	4	1	5	—	1.185	M-2

High-carbon chromium... .83 D-3, D-5  
 Oil hardened manganese... .45 O-2  
 Special carbon... .41 W-1  
 Extra carbon... .345 W-1  
 Regular carbon... .29 W-1  
 Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

## CLAD STEEL

Base prices, cents per lb. l. o. b.

Cladding	Plate (A3, J2, L4)			Sheet (T2)	
	10 pct	15 pct	20 pct	20 pct	
302					35.50
304	36.20	40.30	44.50		37.75
316	41.60	45.90	50.15		55.50
321	37.95	42.10	46.40		44.75
347	41.25	46.45	51.70		54.25
405	29.20	33.15	37.05		
410, 430	28.70	32.65	36.55		

CR Strip (S9) Copper, 10 pct, 2 sides, 39.85; 1 side, 38.00.

## WARE-HOUSES

Class	City Delivery Charge	Sheets				Strip	Plates	Shapes	Bars			Alloy Bars			
		Hot-Rolled (18 ga. & hr.)	Cold-Rolled (15 gauge)	Galvanized (10 gauge)††	Hot-Rolled	Standard Structural	Hot-Rolled (merchant)	Hot-Rolled (special quality)	Cold- Finished	Hot-Rolled 4815 As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4815 As rolled	Cold-Drawn 4140 Annealed		
Atlanta		8.17	9.37	9.83	8.21	8.55	8.59	8.45	10.23						
Baltimore	\$10	7.98	9.08	9.31	8.46	8.36	8.85	8.53	9.13	14.99	14.44	18.39	18.99		
Birmingham	15	7.80	9.00	9.52	7.82	8.16	8.20	8.07	8.44	10.04- 10.12					
Boston	10	8.94	9.98	11.16	8.99	9.28	9.20	9.17	9.57	15.79	14.79	19.14	18.39		
Buffalo	15	8.00	9.15	10.83	8.20	8.45	8.65	8.40	8.85	8.85	15.65	14.65	19.01		
Chicago	15	7.95	9.15	9.80	7.97	8.31	8.35	8.22	8.50	8.50	15.30	14.30	18.65		
Cincinnati	15	8.09	9.20	9.80	8.29	8.67	8.89	8.53	8.87	8.99	15.61	14.61	18.96		
Cleveland	15	7.93	9.13	9.70	8.07	8.54	8.72	8.31	8.67	8.75	15.39	14.39	18.74		
Denver		9.70	11.30	12.49	9.80	9.70	9.80	9.95	10.65				17.60		
Detroit	15	8.18	9.40	10.15	8.32	8.66	8.89	8.52	8.86	8.85	15.46	14.56	18.81		
Houston		8.80	9.75		7.75	8.80	8.00	8.05	10.65	15.50		19.30	19.05		
Kansas City	20	8.52	9.72	10.07	8.60	8.83	8.87	8.73	9.42	15.32	14.77	18.72	18.42		
Los Angeles	10	9.20	10.90	11.35	9.25	9.75	9.25	9.10	9.30	12.20	16.45	15.60	20.30		
Memphis	15	8.02	9.22		8.12	8.35	8.39	8.25	9.85						
Milwaukee	15	8.08	9.28	9.93	8.10	8.44	8.56	8.35	8.71	8.72	15.43	14.43	18.78		
New York	10	8.55	9.76	10.31	9.00	9.11	9.01	9.11	9.48	15.02	14.69	18.42	18.29		
Norfolk	20	8.00			8.40	8.35	8.70	8.45	10.70						
Philadelphia	10	8.25	9.17	10.39	8.92	8.78	8.80	8.81	9.18	9.41	15.61	14.61	18.96		
Pittsburgh	15	7.93	9.14	10.15	8.07	8.31	8.35	8.22	8.59	8.75	15.30	14.30	18.65		
Portland		9.20	11.20	11.55	11.05	9.90	9.35	9.35	13.80	16.70	16.10	20.40	20.25		
San Francisco	10	9.05	10.40	10.90	9.05	9.30	9.15	9.15	9.90	12.40	16.45	15.60	20.30		
Seattle		9.55	10.70	11.65	9.55	9.30	9.35	9.50	9.85	13.40	16.55	15.85	19.50		
Spokane	15	9.70	10.85	11.80	9.70	9.45	9.50	9.65	10.00	13.55		16.75	20.35		
St. Louis	15	8.29	9.49	10.16	8.34	8.67	8.82	8.58	9.11	9.11	15.66	14.66	19.01		
St. Paul	15	8.39	9.59	10.26	8.43	8.90	8.94	8.53	9.21		14.62		18.27		

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.  
 † 16 gage. †† 13 1/2 gage. ‡ Deduct for country delivery.

## ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field	9.00	9.20	
Armature	10.35	10.35	10.85
Elect.	11.00	11.025	11.525
Motor	12.05	12.075	12.575
Dynamo	13.05	13.05	13.55
Trans. 72	14.05	14.05	14.55
Trans. 65	14.60		
Grain Oriented			
Trans. 58	15.10	Trans. 80	18.50
Trans. 52	16.15	Trans. 73	19.00

Producing points: Beech Bottom (W5); Bracknridge (A3); Granite City (G2); Indiana Harbor (I3); Mansfield (E2); Newport, Ky. (N5); Niles, O. (N3); Vandergrift (U); Warren, O. (R3) (20¢ higher, HR); Zanesville, Better (A7).

## LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1957 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails		Wire Fence		Single Loop Bale Ties		Galv. Barbed and Twisted Barbed Wire		Merch. Wire Ann'd		Merch. Wire Galv.	
	Col	Col	Col	Col	Col	Col	Col	Col	Col	Col	Col	Col
Alabama City R3	167	181			195	187	8.10	8.50				
Aliquippa, Pa. J3**	164	179			181	8.20	8.875					
Atlanta A6**	166	182			192	190	8.30	8.85				
Bartonsville K2**	166	182			193	190	8.30	9.04				
Buffalo W6	164	180	167	196	188	8.35	9.10					
Chicago, Ill. N4**	173				182	8.20	8.75					
Cleveland A6						8.20						
Cleveland A5	186	182			190	190	8.30	9.05				
Crawfordsville M4**	164	176			196	184	8.20	8.75				
Donora, Pa. A5	164	176	167	196	184	8.20	8.75					
Duluth A5	164	176			196	184	8.20	8.75				
Fairfield, Ala. T2	164	176			196	184	8.20	8.75				
Galveston D4	180											
Houston S2	169	181			195	189	8.45	9.00				
Johnstown, Pa. B3**	164	180	167		188	8.20	8.90					
Joliet, Ill. A5	164	176			196	184	8.20	8.75				
Kokomo, Ind. C9*	166	178			198	186	8.30	8.85				
Los Angeles B2**						9.15	9.90					
Kansas City S2*	140	181			195	189	8.45	9.00				
Minneapolis C6†	140	181	172	201	189	8.45	9.00					
Monessen P6	167	185			191	181	8.10	8.10				
Palmer, Mass. W6						8.50	9.05					
Pittsburg, Cal. C7	183	199			220	204	9.15	9.70				
Rockwell, Pa. A5	164	176			196	184	8.20	8.75				
Se. Chicago R3	187	181			195	187	8.10	8.50				
S. San Francisco C6†					220	9.15	9.70					
Sparrows Pt. B3**	166				198	190	8.30	9.00				
Struthers, O. Y1†						8.20	8.85					
Worcester A5	170					8.50	9.05					
Williamsport, Pa. S5			175									

\* Zinc less than .10%. † Plus zinc extras.  
 \*\* 11-12¢ zinc. ‡ Wholesalers only.  
 \*\*\* .10¢ zinc.

## C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. T8	9.20	10.40	12.60	15.40	18.55
Bristol, Conn. W12		10.40	12.60	15.40	18.55
Boston T8	9.20	10.40	12.60	15.40	18.55
Buffalo, N. Y. R7	8.65	10.10	12.30	15.30	18.25
Carnegie, Pa. S9	8.65	10.10	12.30	15.30	
Cleveland A5	8.65	10.10	12.30	15.30	18.25
Detroit D2	8.75	10.20	12.40	15.40	
Dover, O. G4	8.65	10.10	12.30	15.30	18.25
Evanston, Ill. M8	8.65	10.10	12.30	15.30	
Franklin Park, Ill. T8	8.75	10.10	12.30	15.30	18.25
Harrison, N. J. C1†		12.60	15.40	18.55	
Indianapolis C5	8.80	10.25	12.30	15.30	18.25
Los Angeles R4	10.85	12.30	14.50		
New Castle, Pa. B4	8.65	10.10	12.30	15.30	
New Haven, Conn. D1	9.10	10.40	12.60	15.40	
Pawtucket, R. I. J7	9.20	10.40	12.60	15.40	18.55
Pittsburgh S7	8.65	10.10	12.30	15.30	18.25
Riverdale, Ill. A1	8.75	10.10	12.30	15.30	18.25
Sharon, Pa. S1	8.65	10.10	12.30	15.30	18.25
Trenton R4	11.05	10.40	12.60	15.40	18.55
Wallingford W1	9.10	10.40	12.60	15.40	18.45
Warren, Ohio T4	8.65	10.10	12.30	15.30	18.25
Worcester, Mass. A5	9.20	10.40	12.60	15.40	18.55
Youngstown C5	8.65	10.10	12.30	15.30	18.25

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Sized		Seamless		Elec. Weld	
	OD- In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	36.34	42.56	33.21	
	2 1/2	12	48.94	57.31	44.73	
	3	12	56.51	66.18	51.66	
	3 1/2	11	65.97	77.25	60.30	
	4	10	87.61	102.59	80.07	
National Tube	2	13	36.34	42.56	33.21	
	2 1/2	12	48.94	57.31	44.73	
	3	12	56.51	66.18	51.66	
	3 1/2	11	65.97	77.25	60.30	
	4	10	87.61	102.59	80.07	
Pittsburgh Steel	2	13	36.34	42.56		
	2 1/2	12	48.94	57.31		
	3	12	56.51	66.18		
	3 1/2	11	65.97	77.25		
	4	10	87.61	102.59		

(Effective May 27, 1957)

**RAILS, TRACK SUPPLIES**

F.o.b. Mill Cents Per Lb	No. 1 Std. Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Unthreaded
Bessemer U.I.	5.275	6.25	6.60			
Cleveland						13.85
So. Chicago R3			9.225			
Ensley T2	5.275	6.25				
Fairfield T2		6.25	9.225	6.275		
Gary U.I.	5.275			6.275		
Huntington C16		6.25				
Ind. Harbor I3	5.275	6.60	9.225	6.275		
Ind. Harbor Y1			9.225			
Johnstown B3		6.25				
Juliet U.I.		6.60				
Kansas City S2			9.225			13.85
Lackawanna B3	5.275	6.25	6.60	6.275		
Lakewood B3						13.85
Minnesota C5	5.275	6.75	6.60	9.225	13.85	
Pittsburgh P5				9.225		13.85
Pittsburgh J3				9.225		
Seattle B2				9.225		6.425 13.85
Steelton B3	5.275	6.60		6.275	13.85	
Struthers Y1			9.225			
Torrance C7				6.425		
Williamsport S5	6.15					
Youngstown R3			9.225			

**COKE**

Furnace, beehive (f.o.b. oven) Net-Ton  
Connellsville, Pa. .... \$15.00 to \$15.75  
Foundry, beehive (f.o.b. oven) \$17.50 to \$19.00

**Foundry oven coke**

Buffalo, del'd	\$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erle, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Ia., Pa.	29.25

**ELECTRODES**

Cents per lb, f.o.b. plant, threaded, with  
nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (In.)	Length (In.)	Price	Diam. (In.)	Length (In.)	Price
24	84	24.75	40	100, 110	10.70
30	72	24.00	35	110	10.70
16 to 18	72	24.50	30	110	10.85
14	72	25.00	24	72 to 84	11.25
12	72	25.50	20	90	11.00
10	60	26.50	17	72	11.40
10	48	27.00	14	72	11.85
7	60	26.75	12	60	12.95
6	60	30.00	10	60	13.00
4	40	33.25	8	60	13.30
3	40	35.25			
2 1/2	30	37.25			
2	24	57.75			

\* Prices shown cover carbon nipples.

**ELECTROPLATING SUPPLIES****Anodes**

(Cents per lb, f.o.b. shipping point)

Copper	
Cast elliptical, 18 in. or longer, 5000 lb lots	47.92
Electrodeposited	39.25
Brass, 80-20, ball anodes, 2000 lb or more	50.00
Zinc, ball anodes, 2000 lb lots	21.25
(for elliptical add 2¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.70
Tin, ball anodes and elliptical \$1.07 per lb	

**Chemicals**

(Cents per lb, f.o.b. shipping point)	
Copper cyanide, 100 lb drum	74.80
Copper sulphate, 100 lb bags, per cwt.	24.35
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	45.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.05
(Philadelphia price 23.30)	
Zinc cyanide, 100 lb	59.00
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 100,000 lb or more	31.00

**BOLTS, NUTS, RIVETS, SCREWS**(Base discount, f.o.b. mill)  
Pct Discounts

Machine and Carriage Bolts	Full Con- tainer Price	30 Con- tainers	20,000 Lb.	40,000 Lb.
1/2" and smaller x 6" and shorter	53 1/2	56 1/2	58 1/2	59 1/2
1/2" thru 1" x longer than 6"	43 1/2	47 1/2	50	51 1/2
Rolled thread carriage bolts 1/2 in. & smaller x 6 in. and shorter	52 1/2	56 1/2	58 1/2	59 1/2
Lag, all diam. x 6" & shorter	52 1/2	56	58	59
Lag, all diam. longer than 6 in.	44 1/2	48	50	51
Flow bolts, 1/2" and smaller x 6" and shorter	52	55 1/2	57	58

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full Case or Keg Price
3/4 in. or smaller	61 1/2
7/8 in. to 1 in. inclusive	57 1/2
1 1/8 in. to 1 1/2 in. inclusive	62 1/2
1 3/8 in. and larger	56

**C. P. Hex reg. & hvy.**

3/4 in. and smaller	61 1/2
7/8 in. to 1 1/2 in. inclusive	57 1/2
1 1/8 in. and larger	56

**Hot Galv. Nuts (All Types)**

3/4 in. and smaller	48
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**Semi-finished Hex Nuts**

3/4 in. or smaller	61 1/2
7/8 in. to 1 1/2 in. inclusive	57 1/2
1 1/8 in. and larger	56

(Add 25 pct for broken case or keg quantities)

**Finished**

1 in. and smaller	64
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**Rivets**

	Base per 100 lb
1/2 in. and larger	\$11.50
7/16 in. and smaller	Pct Off List 23

**Cap Screws**Discount (Packages)  
Bright Treated H. C. Heat

New std. hex head, pack- aged	
3/8" diam. and smaller x 6" and shorter	44 81
3/8" 3/8" and 1" diam. x 6" and shorter	27 9
3/8" diam. and smaller x longer than 6".....	14 + 6
3/8" 3/8" and 1" diam. & longer than 6".....	1/2 + 24

C-1018 Steel  
Full-Finished  
Cartons Bulk

1/4" through 3/8" dia. x 6" and shorter	44 61
3/8" through 1" dia. x 6" and shorter	27 49
Minimum quantity—1/4" through 3/8" diam., 15,000 pieces; 1/16" through 3/8" diam., 5,000 pieces; 3/8" through 1" diam., 2,000 pieces.	

**Machine Screws & Stove Bolts**

	Discount Mach. Screws	Stove Bolts
Plain Finish	19	32
Cartons		
Bulk	Quantity	

To 1/4" diam.	
15,000-200,000	9 54
incl.	
5/16 to 1/2" diam.	
15,000-100,000	9 54
incl.	
All diam. over 3" long	5,000-100,000 — 54

**Machine Screw & Stove Bolt Nuts**

	Discount Hex Square
In cartons	16 19
Bulk	Quantity
3/8" diam. & smaller	15,000-100,000 7 9

**CAST IRON WATER PIPE INDEX**

Birmingham	119.0
New York	131.7
Chicago	134.1
San Francisco-L. A.	141.8
Dec. 1955 value, Class B or heavier 6 in. or larger, bell and spigot pipe. Ex- planation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.	

**REFRACTORIES****Fire Clay Brick**

Carloads per 1000	
First quality, Ill., Ky., Md., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$135.00
No. 1 Ohio	120.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$2.00)	21.50

**Silica Brick**

Mt. Union, Pa., Ensley, Ala.	\$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty	
Hays, Pa., Athens, Tex., Wind- ham, Warren, O., Morrisville	157.00-160.00

Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chi- cago	25.50
Silica cement, net ton, bulk, Ens- ley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

**Chrome Brick**

Per net ton	
Standard chemically bonded, Balt.	\$105.00
Standards chemically bonded, Curt- ner, Calif.	115.00
Burned, Balt.	99.00

**Magnesite Brick**

Standard, Baltimore	\$131.00
Chemically bonded, Baltimore	116.00

**Grain Magnesite**

St. 3/4 to 1/2-in. grains	
Domestic, f.o.b. Baltimore in bulk	\$73.00
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	46.00
In bulk in sacks	52.00-54.00

**Dead Burned Dolomite**

Per net ton	
F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	\$16.00
Midwest	16.35
Missouri Valley	15.00

**METAL POWDERS**Per pound, f.o.b. shipping point, in ton  
lots, for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, West of Miss. River	9.5¢
Domestic sponge iron, 98+-% Fe, 23,000 lb. and over del'd. East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	9.5¢
Electrolytic iron, annealed, imported 99.5+-% Fe	27.5¢
domestic 99.5+-% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+-% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	22.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+-% Fe.	58.0¢ to \$2.90
Aluminum, freight allowed.	38.00¢
Brass, 10 ton lots	37.50¢ to 50.00¢
Copper, electrolytic	45.75¢
Copper, reduced	49.75¢
Cadmium, 100-199 lb, 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe .03 max. Del'd	\$5.00
Lead	8.90¢ plus metal value
Manganese f.o.b. Exton, Pa.	46.0¢
Molybdenum, 99%	\$3.60 to \$3.95
Nickel, unannealed	\$1.00
Nickel, annealed	\$1.00
Nickel, spherical, unannealed #30	\$1.13
Silicon	43.50¢
Solder powder, .70¢ to .90¢ plus met. value	
Stainless steel, 302	\$1.02
Stainless steel, 316	\$1.20
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	\$4.00 (nominal)
Zinc, 10 ton lots	18.75¢ to 32.50¢

**We cast *all* of these alloys . . .  
it will *pay you* to consult us**

Aluminum Bronze (*all grades*)—Aluminum Manganese Bronze (HY-TEN-SL), 90,000 tensile to 120,000 tensile—Manganese Bronze—Nickel Manganese Bronze—Gun Metal—Phosphor Bronze—Valve Bronze—Nickel Bronze—Cupro Nickel—Silicon Bronze—Hydraulic Bronze—Bearing Bronzes—Red Brass, etc.

Note: Our new, flat opening, flexible-bound "Reference Book on Bronze Casting Alloys" has just come off the press—copy will be sent upon request on your Business Letterhead.

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## GRIFFIN<sup>®</sup> COLD ROLLED STRIP STEEL"

Made to your specifications in all thicknesses from .012 to .375 inches and widths from 1/8" to 19" depending upon gauge.

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EDGE STRIP STEEL** *In stock at*

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"since 1899"

**MANUFACTURING CO. ERIE, PA.**

## GOSS and DE LEEUW

MULTIPLE SPINDLE

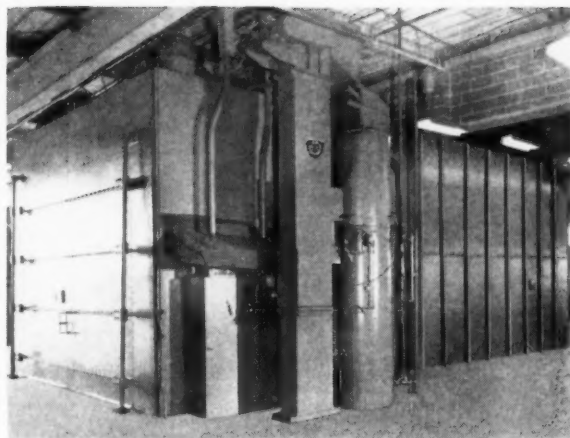
### CHUCKING MACHINES

Four, Five, Six, Eight Spindles • Work and Tool Rotating Type  
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WIRE, COILED  
ACCURATELY ROLLED FOR  
ELECTRIC FUSE ELEMENTS  
EYELETS—BRASS, STEEL AND ZINC**

**THE PLATT BROS. & CO., WATERBURY, CONN.**



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MACLEOD offers complete designing, fabrication, and installation of abrasive blast cleaning rooms, abrasive reclaiming systems, blast generators, and dust collecting systems—designed to meet your specific needs.

The room installation illustrated was built by MACLEOD and is served by a continuous automatic blast generator, abrasive reclaiming and cleaning system, and a dust collecting system with a 54,000 cu. ft. per minute capacity. Write for information on MACLEOD standard or specially designed equipment.

**Our  
60<sup>TH</sup>  
ANNIVERSARY  
YEAR**

**The MACLEOD Company**

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## Bucket handles turnings —and other scrap, too!

Here is the husky Class K Hayward you see in so many mills and plants everywhere. You can't beat this powerful bucket for handling turnings, other scrap or almost anything else. Available also with special digging teeth for heavy rock work, cutting clay, handling rubbish. The Hayward Company, 50 Church St., New York 7, N. Y.

## HAYWARD BUCKETS

**CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES**  
*famous for performance since 1888*



# FERROALLOY PRICES

(Effective May 27, 1957)

## Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, 30-1.00% max. Si.			
9.02% C	41.50	0.20% C	38.50
9.03% C	41.00	0.50% C	38.25
9.06% C	39.50	1.00% C	37.50
9.10% C	39.00	1.50% C	37.25
9.15% C	38.75	2.00% C	37.25
4.00-4.50% C, 67.70% Cr, 1-2% Si.	27.75		
8.50-9.00% C, 67-64% Cr, 2.00-4.50% Si.	27.75		
0.025% C (Simplex)	34.75		
0.10% C, 50-52% Cr, 2% max Si.	35.50		
8.50% max. C, 50-55% Cr, 3-6% Si.	24.00		
8.50% C, 50-55% Cr, 3% max. Si.	24.00		

## High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb. to regular low carbon ferrochrome max 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

## Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.	
0.10% max. C	\$1.31
0.50% max. C	1.31
0 to 11% C, 88-91% Cr, 0.75% Fe	1.40

## Electrolytic Chromium Metal

Contract prices per lb of metal 2" x D plate (1/4" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	
Carloads	\$1.29
Ton lots	1.31
Less ton lots	1.33

## Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Contract price, carloads, delivered, lump 8-in. x down, per lb of Cr, packed.	
Carloads	44.65
Ton lots	48.95
Less ton lots	51.45

## Calcium-Silicon

Contract price per lb of alloy, lump, delivered, packed.	
10-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

## Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered, packed.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads	24.35
Ton lots	26.15
Less ton lots	27.15

## 3M2

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 10% Fe 1/2 in. x 12 mesh.	
Ton lots	20.15
Less ton lots	21.45

## V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 88-92% Cr, 17-19% Si, 8-11% Mn, packed.	
Carload lots	17.25
Ton lots	18.75
Less ton lots	19.95

## Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	18.50
Ton lots to carload packed	19.65
Less ton lots	20.95

## Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	
Marietta, Ashland, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.75
Johnstown, Pa.	12.75
Sheridan, Pa.	12.75
Philo, Ohio	12.75
E. Duquesne	12.75
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed	17.20

## Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.			
Manganese Silicon			
16 to 19%	3% max.		\$100.50
19 to 21%	3% max.		102.50
21 to 23%	3% max.		105.00

## Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.75
Ton lots	47.25

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen-removed metal	0.75

## Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn...

## Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.			
Carloads Ton Less			
0.07% max. C, 0.06%			
P. 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85%			
Mn, 5.0-7.0% Si	28.60	31.40	32.60

## Silicomanganese

Contract basis, lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.	
Carloads bulk	12.80
Ton lots	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	
Ton lots, packed	15.10
	16.50

## Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area, \$115.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.

## Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.			
	Ton lots	Carloads	
96.75% Si, 1.25% Fe	23.70	22.40	
98% Si, 0.75% Fe	24.45	23.15	

## Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.	
Carloads, bulk	7.74
Ton lots, packed	10.55

## Electric Ferrosilicon

Contract prices, cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.			
50% Si	13.00	75% Si	16.40
65% Si	15.25	85% Si	18.10
	90% Si		19.50

## Ferrovanadium

50-55% V contract basis, delivered, per pound, contained V, carloads, packed.	
Open-hearth	3.30
Crucible	3.30
High speed steel (Primos)	3.40

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.			
	Cast	Turnings	Distilled
Ton lots	\$3.05	\$3.35	\$3.75
Less ton lots	1.40	1.30	4.85

Alsilfer, 20% Al, 40% Si, 40% Fe. Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads	10.65¢
Ton lots	11.80¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound Contained Mo

	\$1.33
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Ferrocolumbium, 50-50%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots	\$5.10
Less ton lots	5.15

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd ton lots, 2-in. x D per lb con't Sb plus Ta.

	\$4.35
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Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth Pa., per pound contained Mo.

	\$1.05
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Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton.

10 tons to less carload	\$90.00
	\$110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb. contained Ti.

	\$1.35
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Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti.

Less ton lots	\$1.50
	\$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton.

	\$240.00
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Ferrotungsten, 1/4 x down, packed, per pounds contained W, ton lots delivered.

	\$2.91 (nominal)
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Molybde oxide, briquets, per lb contained Mo, f.o.b. Langeloth, Pa.

bags, f.o.b. Washington, Pa., Langeloth, Pa.	\$1.41
----------------------------------------------	--------

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V<sub>2</sub>O<sub>5</sub>, contract basis, per pound contained V<sub>2</sub>O<sub>5</sub>.

	\$1.35
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Zirconium contract basis, per lb of alloy

35-40% f.o.b. freight allowed, carloads, packed	27.25¢
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12-15%, del'd lump, bulk-carloads

	9.35¢
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Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B.

2000 lb carload	\$5.54
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Borlam, f.o.b. Niagara Falls, Ton lots per pound.

Less ton lots, per pound	50¢
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Corboram, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound	14.00¢
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Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.

F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up	1.20
--------------------------------------------------------------	------

10 to 14% B

	.82
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14 to 19%

	1.20
--	------

19% min. B

	1.52
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Granal, f.o.b. Bridgeville, Pa., freight, allowed, 160 lb and over No. 1

No. 79	\$1.02
	50¢

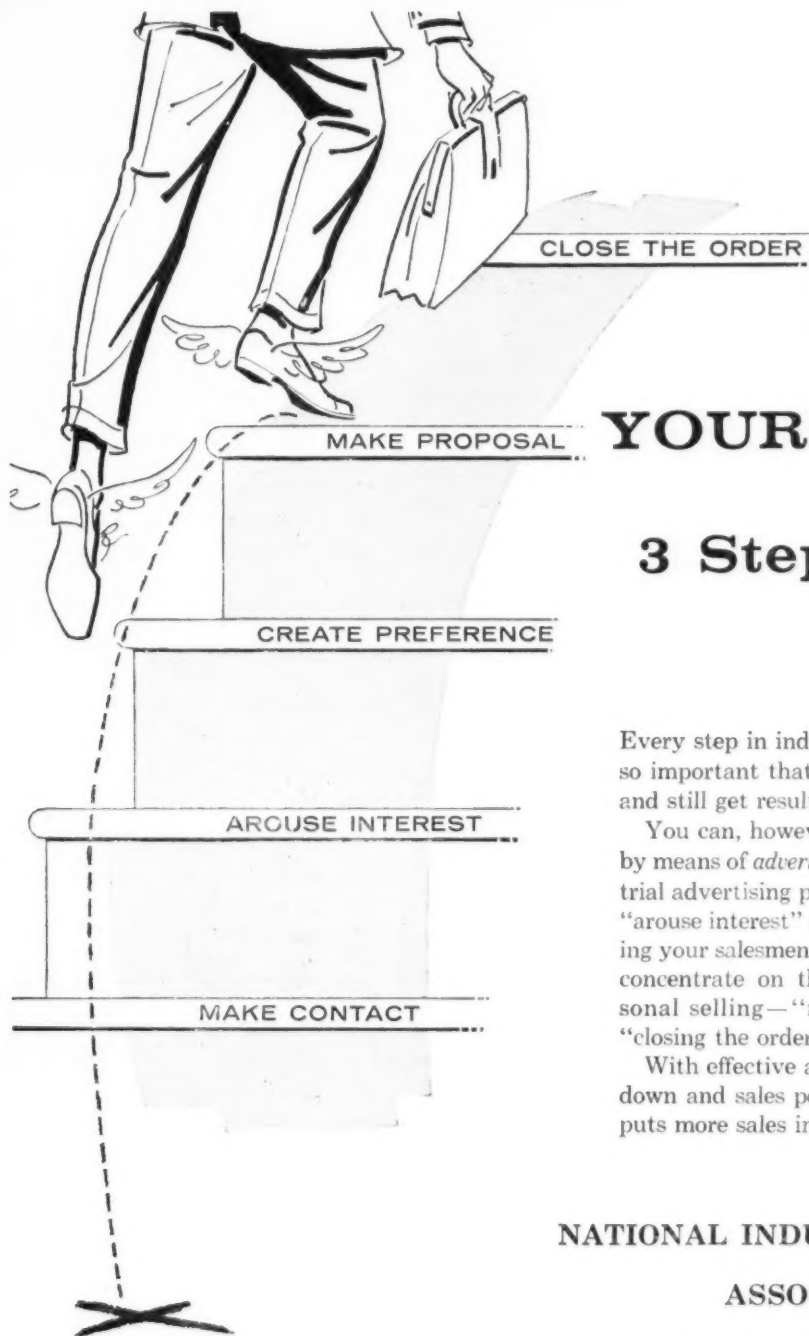
Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots	\$1.48
Less ton lots	1.47

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots.

	\$2.15
--	--------





## Put YOUR Salesmen 3 Steps Ahead

Every step in industrial selling is important—so important that you can't skip any of them and still get results.

You can, however, take the first three steps by means of *advertising*. A well-balanced industrial advertising program can "make contact," "arouse interest" and "create preference," giving your salesmen a three-step lead so they can concentrate on the steps which require personal selling—"making the proposal" and "closing the order."

With effective advertising, cost per call goes down and sales per call go up, for advertising puts more sales in every salesman's day.

### NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION, INC.

271 Madison Avenue, New York 16, N. Y.



An organization of over 4000 members engaged in the advertising and marketing of industrial products, with local chapters in ALBANY, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CLEVELAND, COLUMBUS, DALLAS-FORT WORTH, DENVER, DETROIT, HAMILTON, ONT., HARTFORD, HOUSTON, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, MINNEAPOLIS-ST. PAUL, MONTREAL, QUE., NEWARK, NEW YORK, PHILADELPHIA, PITTSBURGH, PORTLAND, ROCHESTER, ROCKFORD, ST. LOUIS, SAN FRANCISCO, TORONTO, ONT., YOUNGSTOWN.

## RAILWAY EQUIPMENT FOR SALE

Used - As Is - Reconditioned

### RAILWAY CARS

All Types

SERVICE-TESTED

### FREIGHT CAR REPAIR PARTS

For All Types of Cars

### LOCOMOTIVES

Diesel, Steam, Gasoline  
Diesel-Electric

### WANTED

Air-Operated  
Side Dump Cars  
Hopper  
Type Ore Cars  
Standard Gauge

### RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon  
Cleaned and Tested

### CRANES

Overhead and Locomotive

### IRON & STEEL PRODUCTS, Inc.

General Office

13496 S. Brainard Ave.  
Chicago 33, Illinois  
Phone: Mitchell 6-1212

New York Office

50-B Church Street  
New York 7, N. Y.  
Phone: BEekman 3-9230

"ANYTHING containing IRON  
or STEEL"

## THE CLEARING HOUSE

# Chicago Volume Off But Prices Hold

Used toolroom equipment is experiencing a mild downturn in the Midwest.

However, while volume has fallen off, prices paid are still at high levels.

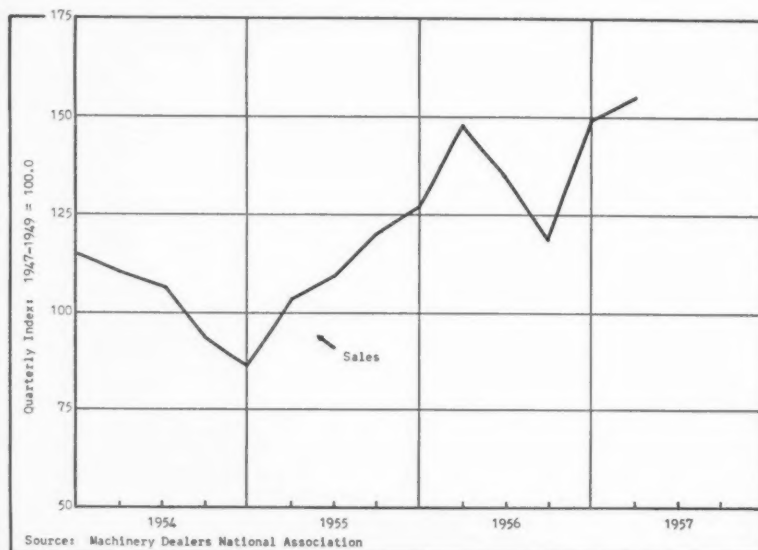
■ There's a mild downturn in tool-room equipment in the Chicago market. However, it must be taken with a grain of salt. It doesn't imply any major cutback in the Midwest tool picture. For instance, a Bridgeport mill that had cost \$1400 new went for \$1500 at a recent auction, and a 14 in. Jameson lathe brought \$1600. Volume in tool room equipment is down, but prices aren't.

The falloff in light stamping activity, particularly in the electronics business, is reflected by a drop in light stamping and punch press equipment. But even here

prices are holding at levels attained in January of this year.

**Higher Price Tags** — Several recent sales, as a matter of fact, suggest that prices are still advancing. This involves tool room equipment as much as it does heavier production line equipment, which has shown absolutely no flagging in demand and, if anything, seems to be growing stronger.

**Outward Bound**—Recent auctions of heavy amounts of this type of equipment in the Detroit area have had absolutely no effect in softening Chicago area demand for these units. Local buyers complain that the heaviest share of the Detroit auctioned equipment must have been absorbed by Detroit buyers or Eastern brokers. Certainly not much of it came into the Chicago area.



**USED MACHINERY SALES GAIN:** During the first quarter of '57 sales of used equipment increased by 4 pct over level of last quarter '56 in MDNA index. A gain of 4.6 pct was made over first quarter '56.

# CONSIDER GOOD USED EQUIPMENT FIRST

**AIR COMPRESSOR**  
450 cu. ft. Ingersoll Rand XRE, 100% Pressure  
100 H.P. Westinghouse Motor 410/3/60

**BENDING ROLLS**  
10' x 1/2" King Pyramid Type—LATE  
10' x 1/2" Ransome, Pyramid Type  
27' x 1/2" Southward, Pyramid Type

**BRACKS—LEAF TYPE**  
8' x 3/16" Dreis & Krump  
12' x 1/2" Dreis & Krump  
12' x 1/2" Dreis & Krump No. 228

**BRACKS—PRESS TYPE**  
8' x 1/2" Geo. A. Oehl  
10' x 1/2" Pacific Hydraulic  
14' x 1/2" Superior Hydraulic—NEW

**BUILDINGS**  
20' x 100' x 20' Under Card  
50' x 25' x 21' Under Card

**CORRUGATING MACHINE**  
12' Stanoec Corrugating Machine, Rolls 24" Dia.

**CRANES—OVERHEAD ELECTRIC TRAVELING**  
3 ton P&H 80' Span 220/4/60  
5 ton Merrill 38' Span 220/3/60  
5 ton Whiting 48' Span 230/3/60 A.C.  
5 ton Case 38' Span 220/3/60  
8 ton P&H 55' Span 220/3/60  
10 ton Shepard Niles 38' Span 440/3/60  
10 ton Shepard Niles 52' Span 220 Volt D.C.  
15 ton Shepard Niles 40' Span 220/410 A.C.  
15 ton Shepard Niles 59' Span 220/410 A.C.  
20 ton P&H 47' Span 220/410 A.C.  
25 ton Cleveland 19' Span 220/3/60  
With 10 ton Auxiliary (Mill Type)

**CRANE TROLLEY**  
10 ton P&H Type HMR Crane Trolley, Motors 440/-  
3/60, Magnetorque Contactor, Panel New

**DIEING MACHINE**  
60-ton Henry & Wright, Roll Feed, Scrap Cutter  
4" Brake No. 350

**FORGING MACHINES**  
1' to 6" Acme, Ajax, National

**FURNACE—ANNEALING**  
Lithium Atmosphere Car-Type Annealing Furnace  
Heating Section 21' L, 14'6" W, 17' H Overall

**HAMMERS—BROAD DROP—STEAM DROP—STEAM  
FORGING—800 lb to 20,000 lb.**

**HEADERS**  
230 Waterbury Farrell Hi-Speed DS SD Capacity 1/4"  
LEVELERS—ROLLER  
37' Torrington, 15 Roll 1-31/32" Dia. Backed up  
48' Actina Standard 17 Rolls 3/4" Dia.  
34' McKay, 17 Rolls, 3/4" Dia.  
185' American, 17 Rolls, 1/2" Dia.

**PRESSES—HYDRAULIC**  
200 ton Farquhar Straightening Press 18" Stroke,  
Working Area 12' long  
800 ton Clearing, 48" Stroke, Red 48 x 48"  
4500 Baldwin-Lima Hamilton Hydr. Forging Press

**PRESSES—TOGGLE DRAWING**  
23 1/2" Bliss 125 ton, Bolster 19" x 26"  
21 Bliss 170 ton, Bed Area 34" x 31"  
1018 Bliss 1500, Die Space 60" x 72"

**PRESSES—STRAIGHT SIDE**  
110 ton Cleveland 55D-54, 5" Stroke  
Bolster 42" x 54", Air Cushion  
150 ton Cleveland D-60, 6" Stroke  
Bolster 40" x 60", Air Cushion

**PUNCH & SHEAR COMBINATIONS**  
Cleveland Style G Single Knd, 60" Throat  
Cleveland Style W, 60" Throat  
No. 1 1/2" Buffalo Universal Ironworker

**ROLLING MILLS**  
8' x 5" Torrington Wire Flattening Mill Line

9" Bar Mill  
10" x 14" Single Stand Two High  
12" x 12" Single Stand Two High  
12" x 16" Single Stand Two High  
16" x 24" Farrel Two Stand Two High  
20" x 72" Cold Rolling Mill  
20" x 40" Three High Sheet Mill

**SHEAR—ALLIGATOR**  
No. 4 Mesta RH LK, Capacity 2" x 12"

**SHEAR—BAR**  
No. 12 Buffalo Armor Plate  
Capacity 5" to 15" Beams & Channels  
48" Mesta Bar Shear, Capacity 4" x 35" Slabs Hot,  
Motor Drive with 75 H.P. D.C. Motor

**SHEAR—GATE**  
12' x 1/2" Niagara Model 1212, NEW 1951

**SHEAR LINES**  
18" x 2 1/2" Halden, With Cell Box, Leveler Tables,  
90" x 14 Ga. Cleveland, With Payoff, Leveler, Riser

**SHEARS—SQUARING**  
6' x 18 Ga. Niagara No. 672  
8' x 1/2" Niagara—NEW 1952

**SLITTERS**  
36" Paxton Slitting Line

**STRAIGHTENERS**  
30" Medart & Roll, Capacity to 4 1/2" Tubing

**SWAGING MACHINE**  
24" Penn, Capacity 2 1/2" Tubing, LATE  
26" Penn, Capacity 3 1/2" Tube 3 1/2" Solid 10"  
Die Length Hydraulic Feed, LATE

**TESTING MACHINE**  
20,000 lb Baldwin Universal Hydraulic  
TUBE MILL  
2000 lb Welded Tube Mill, Cut-off & Transformer  
Copy 1/2" OD to 2 1/2" wall to 3" OD, 120 wall

**WIRE DRAWING MACHINE**  
Vaughn 4-Block 22" dia. Blocks

Manufacturing

## A. T. HENRY & COMPANY, INC.

50 CHURCH ST., NEW YORK CITY 8

Telephone COrlandt 7-3437

Equipment

Confidential Certified Appraisals  
Liquidations—Bona Fide Auction Sales Arranged

Consulting Engineering Service  
Surplus Mfg. Equipment Inventories Purchased

2000# Chambersburg Pneumatic Forging  
Hammer Late Type, Serial 20CH392L7.

2500 lb. Erie Single Leg Steam Forg.  
Hammer

No. 7 Ajax Forging Press, 700-ton capacity

3—2-ton Denison Auto. Hopper Feed &  
Index Table Hydr. Multipress

25 Transformer and Generating Arc  
Welders

2500 lb. Model E Chambersburg Steam  
Drop Hammer, New 1944

6' x 10 ga. Cincinnati Squaring Shear  
1/4" x 8" P. & W. Gate Shear; 20" throat

4" National High Duty Upsetting & Forg-  
ing Machine, air clutch, also one with  
regular clutch, also 1", 2", 3" air clutch

Williams White Bulldozers from 5-ton to  
300-ton

Landis Landmaco and other Landis  
Threading Machines

Single & Double End Punches

No. 3 Motch & Merryweather Saw, with  
Saw Grinder

**BOLT, NUT AND RIVET MACHINERY,  
COLD HEADERS, THREAD ROLLERS,  
THREADING MACHINES, TAPPERS,  
COLD BOLT TRIMMERS, SLOTTERS,  
HOT HEADERS AND TRIMMERS, COLD  
AND HOT PUNCH NUT MACHINES.**

**DONAHUE STEEL PRODUCTS CO.**  
1919 W. 74th Street, Chicago 36, Ill.

### SMALL 2HI COLD ROLLING MILLS

8" dia by 8" f Standard, Roller Bgs. 15 HP  
6" dia by 5" f Standard, Grading Mill, 10 HP  
5" dia by 8" f Standard, Roller Bgs. 7 1/2 HP  
3" dia by 5" f Ruesch, Bz Bgs. 3 HP 1/2" Belt  
4" dia by 2 1/2" f Buffalo, Bz Bgs. Flat Wire  
Also 12", 16" & 20" 2HI Cold Mills.

**F. H. CRAWFORD & COMPANY, INC.**  
30 Church Street New York 7, N. Y.

### RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCP	600	400/300
3	1375	G.E.	MCF	415	1300
1	1200	G.E.	MCF	600	450/600
1	940	Whae.	QM	250	140/170
1	800	Whae.		300	250/330
With United Gear Set 7:1 Ratio					
3	450	Whae.	MPC	550	415
2	300	G.E.	MPC	230	400
1	250	G.E.	MPC	250	400/600
2	200	Whae.	CB-207.4	250	850/1200
1	150	G.E.	CD B.B.	600	250/760
1	150	G.E.	45-H	230	1150
1	125	Whae.	SK-185	230	350/1050
1	125	Whae.	SK-183	230	850
2	100	Whae.	SK-181	230	450/1000
1	100/100	G.E.	RF-17	230	450/800
2	75	G.E.	53 B TEFC	230	800
1	50	G.E.	MD-412-AE	230	550
6	40	Rel.	385F TEFC		
2	30/40	Whae.	RB	230	500/1300
3	(unused)	30 G.E.	DD	230	500/1400
			CDM-85 RB	230	2200

### MG SETS—3 Ph. 60 Cy.

Qu.	KW	Make	RPM	Volts	AC
2	2000/2400	G.E.	450	250/300	2300/4000
1	2000	G.E.	500		
			25 Cy.	600	11000
1	2000	G.E.	514	600	2300/4600
1	1500	G.E.	720	600	6000/13200
3	1000	G.E.	720	600	6000/13200
2	1000	G.E.	514	600	6000/13200
1	750	G.E.	720	125/250	2300/4600
1	500	Whae.	900	125/250	440
2	300	Whae.	1200	250	2300
2	300	Whae.	1200	275	440/2300
1	200	Whae.	1200	250	2300
1	200	G.E.	1200	250	440

### TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltagess
1	3000	A.C.	OTSC	3	3300 x 2300
1	1500	G.E. auto. HT		3	4000/4200/4400
3	1000	G.E.	HYTDJ	1	2400 x 450
3	1000	G.E.	O.A.F.A.	1	13800 x 230/400V
1	833	G.E. H		1	13800 x 460
2	750	G.E.	Pyranol	1	4800 x 83/55
3	500	Kuhl.	OTSC	1	13200 x 6000
1	500	G.E.	OTSC	1	13200 x 2300
1	500	G.E.	HIS	1	13500 x 600
1	300	G.E. HT		3	4160 x 480/277
1	100	G.E.	Air-Cooled 3		432/480 x 120/208Y
3	150	G.E.	OTSC	3	33000 x 2300/4000Y
1	50	G.E.	Askarel	3	13200 x 120/208Y
(unused)			filled		

**RELYEA COMPANY, INC.**  
47 Howell Street, Jersey City 6, N. J.

### BENNETT MACHINERY CO.

**NEW BATH PRESS BRAKES**  
10' x 1/4" No. 150-10, 150 ton, 12' bed  
10' x 3/16" No. 120-10, 120 ton, 12' bed  
10' x 8 ga No. 100-10, 100 ton, 12' bed

375 Allwood Rd., Clifton, New Jersey  
Phone REsult 9-8974 N. Y. Phone LOngacre 3-1222

### REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

#### SLIP RING MOTORS

##### Constant Duty—3 phase, 60 cycle

Qu.	H.P.	Make	Type	Volts	R.P.M.
2	2500	Whae.	CW	4600/2300	720
1	2500	G.E.	Mill	4000	240
1	1800	Whae.	Mill	6600/4300	270
2	1800	Whae.	Mill	2200	230
2	500	Al. Ch.	ARY	2300	300
1	500	G.E.	I-M	2300	450
1	400	Al. Ch.	ARY	2300	500
1	400	Whae.	CW	2300	280
1	350	G.E.	I-M-15B	2300	1180
1	300	Whae.	MT-412	2300	430
1	250	Al. Ch.	ARY	2300	720
1	250	G.E.	MT-414	2300	2300
1	200	G.E.	I-M	2300	1760
2	200	G.E.	I-17-M	2300	585
1	200	G.E.	I-14-M	2300	490
1	150	Al. Ch.	ARY	440/220	720
1	150	Whae.	CW	4160/2300	585
1	150	Whae.	CW-1000	440	430
1	100	Whae.	CW	440/220	1160
1	100	El. Dy.	EDX612	2300	270
2	100	G.E.	MT-562	440/220	500
2	100	G.E.	I-15A-M	2300	495
1	100	Al. Ch.	ARY	440	430

#### SYNCHRONOUS MOTORS

##### 3 Phase, 60 Cycle

Qu.	H.P.	Make	P.F.	Volts	R.P.M.
1	1750	G.E.	100	2200	2600
1	1500	G.E.	80	2400/4160	900
1	1500	Whae.	80	2300	514
1	920	G.E.	80	2200/4160	2300
1	710	G.E.	80	2300	720
1	450	Whae.	100	2200	128.5
3	350	G.E.	100	2300	900
1	300	G.E.	100	2300	720
1	300	G.E.	80	2200	600
2	300	G.E.	80	440	400
2	250	Whae.	80	440	200
1	200	Al. Ch.	100	2300	514
1	200	G.E.	100	2300	360
1	150	G.E.	100	2300	900
1	150	El. Mch.	80	230	720
1	150	G.E.	100	550	600
3	125	G.E.	80	4000/2200	1200
1	125	G.E.	80	2200	800
2	100	Whae.	80	440/220	1800
1	100	Ideal	80	440/220	900
2	100	G.E.	80	410/220	600
1	100	El. Mch.	100	410/220	360
2	50	G.E.	80	2200	600

### T. B. MAC CABB COMPANY

4302 Clarissa St., Philadelphia 40, Penna.

Cable Address Phone

"Macsteel" Philadelphia, Pa. Davenport 4-8300

No. 5-90 x 4' Cinn. Press Brake, NEW.

Hardinge H.T.C. Chucks, older.

Fellows Str. Line Gear Generators.

No. 2510 x 10' Cinn. Shear, 1937.

**D. E. DONY MACHINERY CO.**

4357 St. Paul Blvd. Rochester 17, N. Y.

## THE CLEARING HOUSE

- 1—14" & 32" x 48" COLD MILL, 4-HIGH, with combination pinion stand and gear reducer, motor driven screwdown.
- 2—28" S-HIGH ROLL STANDS with inlet, outlet and intermediate tables. Will produce 4" sq. billets from 8" sq. blooms in 6 passes. Includes bloom shear.
- 1—28" REVERSING BREAKDOWN MILL.
- 1—25" & 42" x 60" HOT STRIP MILL, 4-high.
- 1—28" PINION STAND, 2-high, modern design.
- 1—16" x 24" COLD MILL, 1 stand.
- 2—10" x 18" 2-HIGH COLD MILLS, combination pinion stand and gear set, extra forged steel rolls.
- 1—10" ROD MILL.
- 2—MECHANICAL COOLING BEDS for bars, 150 ft. and 120 ft. long.
- 1—ROLL FORMING MACHINE, Kane & Roach for .072" x 5 1/2" wide stock.
- 1—COIL-UP-AND-DOWN ENDER for 54" dia. x 44" wide coils.
- 1—34" x 192" ROLL GRINDER with motors and controls.
- 1—44" ROLL LATHE, enclosed headstock, tailstock, piano rest, 28 HP 500/1500 RPM, 230 volts D.C. motor and controls.
- 2—ROLLER LEVELERS, McKay, rolls 80" face & 5 1/2" dia., with gear box and universal spindles.
- 1—STRETCHER LEVELER for sheets, 500,000 lb. capacity.

- 1—KANE & ROACH BAR AND ANGLE STRAIGHTENER, size #5 cap. 4" x 4" x 1/2" angles 5" channels, 2 1/2" bars.
- 2—KANE & ROACH BAR AND ANGLE STRAIGHTENERS, size #4, cap. 3" x 3" x 5/8" angles, 3 1/2" channels and 2" bars.
- 1—LOCOMOTIVE, 62 1/2 ton Diesel Electric.
- 2—UNITED HOT SAWS, 50", sliding frame.
- 1—BONNET BILLETTEER, size "A," cap. 3" to 6" Squares.
- 1—UNITED #4 BAR SHEAR, vertical open side.
- 1—PELS BILLET AND BAR SHEAR, cap. 7" round, 50 HP motor.
- 1—CRACKER SHEAR, AETNA-STANDARD, 2 1/2" Bars.
- 1—ALLIGATOR SHEAR, cap. 4" sq. or 5" rd., with 35 HP motor, blades 23 1/2" long, weight 60,000 lbs.
- 1—ROTARY SIDE TRIMMING SHEAR, capacity 112" x 5 1/2" plate.
- 1—192" x 10 GAUGE NIAGARA SQUARING SHEAR, little used.
- 1—156" x 1 1/4" SHEET SQUARING SHEAR.
- 1—SLITTING SHEAR FOR SHEETS, Mesta 92".
- 1—FLYING SHEAR, capacity 1 1/2" thick x 38" wide in lengths from 2 1/2" to 12 ft.

- 1—ALLIANCE LADLE CRANE, 4 girders, 80 ton main hoist, 25 ton auxiliary, 55'5" span, 42' lift.
- 1—DRAWBENCH, Mesta, oil-hydraulic, for 3 strands of bars 20" long.
- 8—PICKLING MACHINES for sheets, Mesta.
- 1—SCRUBBER AND DRYER for sheets 66" wide
- 2—PACK FURNACES for hot sheet mills, 62" x 60", double chamber.
- 1—66" GALVANIZING LINE for sheets, with 2 roller levelers.
- 3—LIFT TRUCKS, 3-ton Elwell-Parker.
- 1—3500 HP GEAR DRIVE, 514 to 80 RPM, 6.45 to 1 ratio.
- 1—2000 HP GEAR DRIVE, 200/580 RPM input, 4.44 to 1 ratio.
- 1—1600 HP GEAR DRIVE, 514 to 87 RPM, 5.9 to 1 ratio.
- 1—1200 HP GEAR DRIVE, 353 to 94.6 RPM, 3.73 to 1 ratio.
- 1—3500 HP MOTOR, 11000 volts, 3 phase, 60 cycle, 514 RPM.
- 1—1200 HP MOTOR, 2200 volts, 3 phase, 60 cycle, 353 RPM.
- 1—MC-30 WEST. MOTOR, 230 V. D.C. back axle brackets and shaft.
- 1—MC-20 WEST. MOTOR, 230 V. D.C. back axle brackets and shaft.

# FRANK B. FOSTER, INC.

2220 Oliver Building, Pittsburgh 22, Pa.  
cable: "Foster, Pittsburgh" Telephone ATlantic 1-2780

### MACHINE TOOLS FOR INDUSTRY

#### LATHES

- 120" swing x 80 feet casters Niles Bement Pond engine lathe, 2 carriages, 4 section lathe bed
- 80" Betts Bridgeford geared head engine lathe headstock only
- 28" 8" ce Betts Bridgeford axle lathe, two carriages
- 28" x 92" ce Bridgeford heavy duty selective geared head engine lathe
- Model 5D Gisholt capillatime, planer type, automatic
- 28" x 37" ce Fay Automatic lathe, MD
- 28" x 90" ce LeBlond geared head, Timken bearing, hardened ways, production
- 13" x 30" ce Lipo Carbamate hydraulic, production lathe

#### MILLING MACHINES, AUTOMATIC PRODUCTION

- 18" Cincinnati single automatic bed type
- No. 3 Sundstrand Rigidmill, bed type, production
- 2-24 Cincinnati Simplex automatic production
- 4-36 Cincinnati hydromatic bed type production
- 34-36 Cincinnati duplex hydromatic

#### MILLS, BORING

- 62" Gisholt vertical boring and turning mill PRT
- 4" bar universal Tri-Way horizontal table type
- 3 1/2" No. 5 Deane horizontal, table type
- 3" bar Model 30 Universal Tri-Way table horizontal
- MILLS, INGERSOLL
- 42" x 42" x 18" Ingersoll planer type, adjustable rail
- 48" x 20" x 20" Ingersoll planer type
- 34" x 98" Ingersoll vertical milling
- 72" Ingersoll 2 spindle continuous rotary PRESSES

- 400 ton No. EG54 Ferracute upward working coining-embossing
- 600 ton No. 064 Toledo tiered frame, knuckle joint, coining
- 200 ton No. 7 x 72" Bilco double crank, straight slide, tiered, air clutch
- 120 ton Model 80-D-88 Cleveland S.S., DC, and tiered frame
- 350 ton No. 18T Cleveland S.S. double action toggle drawing
- 140 ton No. A-61 Niagara OBI BG, late
- 80 ton No. UA80 Niagara steel cast frame, adjustable knee, punching
- 900 ton Model 2E-48-800 Hamilton S.S. BG, air clutch, new 1947
- 750 ton No. 3 National Maxipress, late

#### SAWS

- 10 1/2" x 10 1/2" No. 8 Metch & Merryweather, cold metal, late
- 6" x 6" Peerless universal shaping
- 6" x 6" No. 8 Marvel high speed

#### UPSETTERS

- 1" Ajax steel frame, air clutch, motor drive

Ask for Stock List

### MILES MACHINERY CO.

PHONE SAGINAW PL 2-3105  
2041 E. GENESEE AVE. SAGINAW, MICH.

### USED STEEL MILL EQUIPMENT FOR SALE

- 1—Rotary Reheat Furnace, 20' dia. x 41' high hearth, single door, 9 North American Gas and Oil Burners.
- 1—Number 5 Brownhoist Diesel Locomotive Crane, 25 Ton, 50' boom, D-13000 cat. engine, built 1948.
- 1—Propane Gas Plant 33,000 gal. capacity with compressor, after coolers, tanks and all equipment.
- 1—10 Ton Crane Trolley, less motors, wheel span 6-9" center to center of rails, hoist speed 27 FPM, trolley speed 150 FPM.

*Lou F. Kinderman*

Box 182 - Niles, Ohio • Phone OL 2-9876

### TOTAL OF 17,500-KW IN M.G. SETS

- 5—3500-KW, 3 Unit, Allis-Chalmers, Motor Generator Sets, Each consisting of:
- 2—1750-KW, 250/350 Volts parallel, 500/700 Volts series, 514 RPM, 5000 Amp., type HCC, rated continuous at 40 Deg. C. Allis-Chalmers DC Generators with Class B Insulation, separately excited, direct connected in the center to:
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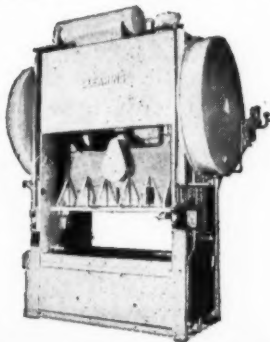
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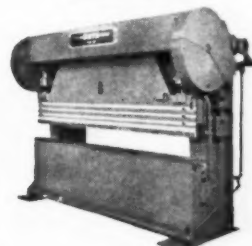
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**Business Probe (Continued from p. 55)**

House Small Business Committee last week opened a study of concentration in the scrap industry—with a corollary jab at the government's scrap export policies—is going to get into a study later of whether "little fellers" are being driven to the wall by larger firms in the current battle for available credit funds.

Rep. Patman will try to discover the extent to which officers of big financial institutions and big industrial and commercial corporations are interlocked and if so, whether it is having any effect on financing for small firms.

**Regulate Or Dominate**—Another group of legislators, headed by Rep. Moulder, D., Mo., will probe regulatory agencies, such as the Interstate Commerce Commission, the Federal Trade Commission, and others to see if they're being dominated by the industries they are supposed to regulate. There are a host of other probes, some of which may become important as they dig in the business community's back yards.

Rep. Moulder's investigation is particularly important because it was ordered by Rep. Sam Rayburn, D., Texas, powerful Speaker of the House. Rep. Rayburn, who helped set up many of the regulatory agencies, is particularly seeking proof that the Eisenhower Administration, in naming Republicans to the commissions, has turned them over to business.

**Pre-Merger Delay**—Because of the delay in getting the crop of business investigations under way, the highly touted pre-merger notification bill, backed by the Administration and a large bloc of congressmen, may not be pushed out for a final vote until next year.

The business probes this year are going to cover, for the most part, familiar ground—ground that's been plowed by other committees many times over the years. Purpose is simply to gather campaign material.

**Military Needs Less Titanium**

The government has advised titanium producers and fabricators there will be a substantial drop in titanium requirements this year and in 1958 and 1959. Listing a stretch-out of procurement expenditures as the reason for the decline, U. S. officials also told titanium firms that the time is coming when the metal must compete with other materials in military applications.

**Industrial Furnace Orders Drop**

Orders for industrial furnaces took a nose dive in April, dropping to \$3.1 million as contrasted with \$8.8 million in the same month of 1956. Sales for the first four months of 1957 were \$28 million, down 27 pct from the total of \$38.2 million for the initial four months of 1956.

An asterisk beside the name of advertiser indicates that a booklet, or other information, is offered in the advertisement. Write to the manufacturer for your copies today.

<b>A</b>	Elwell-Parker Electric Co. .... 96
Air Products, Inc. .... 82 & 83	Erie Foundry Co. .... 4
Ajax Steel & Forge Co. .... 150	
*Allen-Bradley Co.	
Between Pages 112 & 113	<b>F</b>
Allied Research Products, Inc. .... 72	Falk Machinery Co. .... 148
American Bridge, Division United States Steel Corp. .... 31	Foster, Frank B., Inc. .... 148
*American Manganese Bronze Co. .... 143	Foster, L. B., Company .... 10
American Pulverizer Co. .... 118	Frank M. K. .... 150
American Screw Co. .... 22, 92 & 93	
Arbutus Steel Co., Inc. .... 151	
Armstrong, James P. .... 150	
Armstrong-Blum Manufacturing Co. .... 76	
*Armstrong Bros. Tool Co. .... 153	<b>G</b>
Atlantic Screw Works, Inc. .... 92 & 93	Garden State Tanning, Inc. .... 149
	General Refractories Co. .... 13
<b>B</b>	Gisholt Machine Co. .... 24 & 25
Barry Controls, Incorporated .... 11	Goodrich, B. F., Industrial Products Company .... 154
Belyea Co., Inc. .... 147	Goss & DeLeeuw Machine Co. .... 143
Benkart Steel & Supply Co. .... 148	Great Lakes Screw Corp. .... 92 & 93
Bennett Machinery Co. .... 147	Greenpoint Iron & Pipe Co., Inc. .... 150
Bethlehem Steel Co. .... 1	Griffin Manufacturing Co. .... 143
Birdsboro Steel Fdry. & Machine Co. .... 39	Grob, Inc. .... 63
Blake & Johnson Co., The .... 92 & 93	
Bliss, E. W., Co., Press Division .... 17	<b>H</b>
Brill Equipment Co. .... 147	*Harper Electric Furnace Corp. .... 87
*Buffalo Forge Co. .... 25	Harper, H. M., Co., The .... 92 & 93
	Hayward Company, The .... 143
<b>C</b>	Hendrick Manufacturing Co. .... 114
Carlson, G. O., Inc. .... 44	Henry, A. T., & Company, Inc. .... 147
*Carlstrom Pressed Metal Co., Inc. .... 86	*Herr Equipment Corporation, The .... 84
Central Screw Co. .... 92 & 93	*Hill, Walter P., Inc. .... 135
Chambersburg Engineering Co. .... 120	Hofmann, A. Jay, Co. .... 151
*Cincinnati Shaper Co., The .... 34 & 35	Hughes, Arnold, Co. .... 150 & 151
Cities Service Oil Co. .... 79	Hyman, Joseph, & Sons .... 149
Clearing Machine Corp. Div., U. S. Industries, Inc. .... 88 & 89	
*Cleveland Cap Screw Co., The .... 28	<b>I</b>
*Cleveland Crane & Engineering Co., The Steelweld Machinery Div. .... 42	Independent Engineering Co. .... 86
*Cleveland Worm & Gear Co. .... 50	*Industrial Brownhoist Corp. .... 74
Colorado Fuel & Iron Corp., The Wickwire Spencer Steel Div. .... 90	Iron & Steel Products, Inc. .... 146
Consumers Steel & Supply Co. .... 151	
Continental Screw Co. .... 92 & 93, 94	<b>J</b>
Corhart Refractories Co., Inc. .... 126	*Jones & Laughlin Steel Corp. .... 64
Crawford, F. H., & Co., Inc. .... 147	
Cromwell Paper Co. .... 66	
Crucible Steel Co. of America .... 119	<b>K</b>
Cuyahoga Wrecking Co., The .... 150	Kane & Roach, Inc. .... 16
	Kinderman, Lou F. .... 148
<b>D</b>	Kulka, J. N., Co. .... 149
*Dake Corporation .... 95	
Dan-Dee Equipment Mfg. Co. .... 149	
Davidson Pipe Co., Inc. .... 150	<b>L</b>
Denison Engineering Division of American Brake Shoe Co. .... 116 & 117	Lake Erie Machinery Corp. .... 8
Donahue Steel Products Co. .... 147	Lamson & Sessions Co., The .... 92 & 93
Dony, D. E., Machinery Co. .... 147	Lang Machinery Co., Inc. .... 148
	LeBlond, R. K., Machine Tool Co., The .... 40 & 41
<b>E</b>	Luntz Iron & Steel Company, The .... 131
Eastern Machinery Co., The .... 149	Luria Bros. & Co., Inc. .... 133
Eico Tool & Screw Corp. .... 92 & 93	



## IN THIS ISSUE

### M

McKay Machine Co., The	91
McLouth Steel Corp.	Between Pages 16 & 17
MacCabe, T. B., Co.	147 & 148
MacDell Corp., The	148
*MacLeod Co., The	143
*Magnallux Corporation	33
Mesta Machine Co.	Inside Front Cover
Metal & Thermit Corp.	69
Miles Machinery Co.	148
Minster Machine Co., The	46 & 47
Moltrup Steel Products Co.	135
Moorehead Electric Machinery Co.	149

### N

National Business Bourse	151
National Lock Co.	92 & 93
National Machinery Exchange	149
National Screw & Mfg. Co., The	92 & 93
National Steel Corp.	23
*New Departure Div., General Motors Corp.	48
*Norton Company, Abrasive Grain Div.	27

### O

O'Connor, Charles Wm.	150
Ohio Ferro-Alloys Corp.	5
Ornitz Equipment Corp.	150

### P

Parker-Kalon Div., General American Transportation Corp.	92 & 93
Pheoli Mfg. Co.	92 & 93
Platt Bros. & Co., The	143
Plume & Alwood Mfg. Co.	149
Press & Shear Machinery Corp.	149
Progressive Mfg. Co. Div., The Torrington Co.	92 & 93, 123
Purdy Company, The	150

### R

*Republic Steel Corp.	36 & 37
Roebbling's, John A., Sons Corp.	18

### S

SKF Industries, Inc.	Between Pages 16 & 17
Sandusky Foundry & Machine Co.	30
Scovill Mfg. Co.	92 & 93
Screw Research Assn.	92 & 93
Selas Corp. of America	45
Shakeproof Div., Illinois Tool Works	92 & 93
Sharon Steel Corp.	6
Sheffield Corp.	20 & 21
*Southern Screw Co.	9
Southington Hdwe. Mfg. Co., The	92 & 93

Standard Oil Co. of Indiana	14 & 15
*Standard Pressed Steel Co.	32
*Standard Tube Co., The	43
Steel & Tube Div., Timken Roller Bearing Co.	80
Steelweld Div., The Cleveland Crane & Engineering Co.	42
Sterling Bolt Co.	93 & 93
Strom Machinery Corp.	148

### T

Thomas Machine Manufacturing Co.	19
Timken Roller Bearing Co., The, Steel & Tube Division	80

### U

United States Steel Corp.	31
U. S. Steel Wire Spring Co., The	153
Universal Machinery & Equipment Co.	148
Universal Screw Co.	92 & 93

### V

Verson Allsteel Press Co.	Back Cover
*Vickers, Incorporated, Division of Sperry Rand Corporation	70

### W

Wagner Electric Corp.	26
Wales-Beech Corp.	92 & 93
Wallack Bros.	151
Weirton Steel Co.	23
Weiss, B. M., Co.	149
Weiss Steel Co., Inc.	151
*Wheelabrator Corporation	12
Wickwire Spencer Steel Div., The, Colorado Fuel & Iron Corp.	90
*Wiedemann Machine Co.	113
*Williams, J. H., & Co.	85
*Wilson, Lee, Engineering Co., Inc.	Inside Back Cover
Wood, R. D., Co.	61
Worcester Pressed Steel Co.	115

### Y

Youngstown Welding & Engineering Co.	36
--------------------------------------	----

### CLASSIFIED SECTION

Clearing House	146-150
Contract Manufacturing Appears in first and third issue of each month. See May 2 & May 16	
Employment Exchange	151
Equipment & Materials Wanted	151



## ARMSTRONG Drop Forged EYE BOLTS

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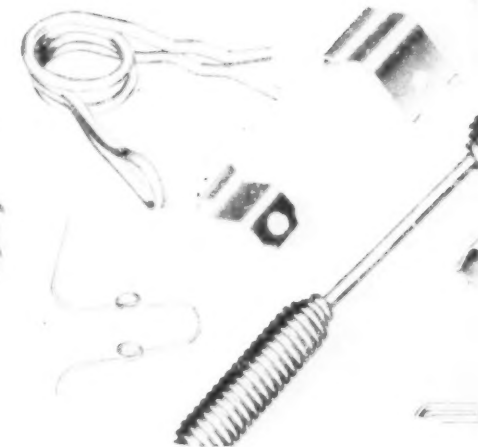
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# B.F. Goodrich report:

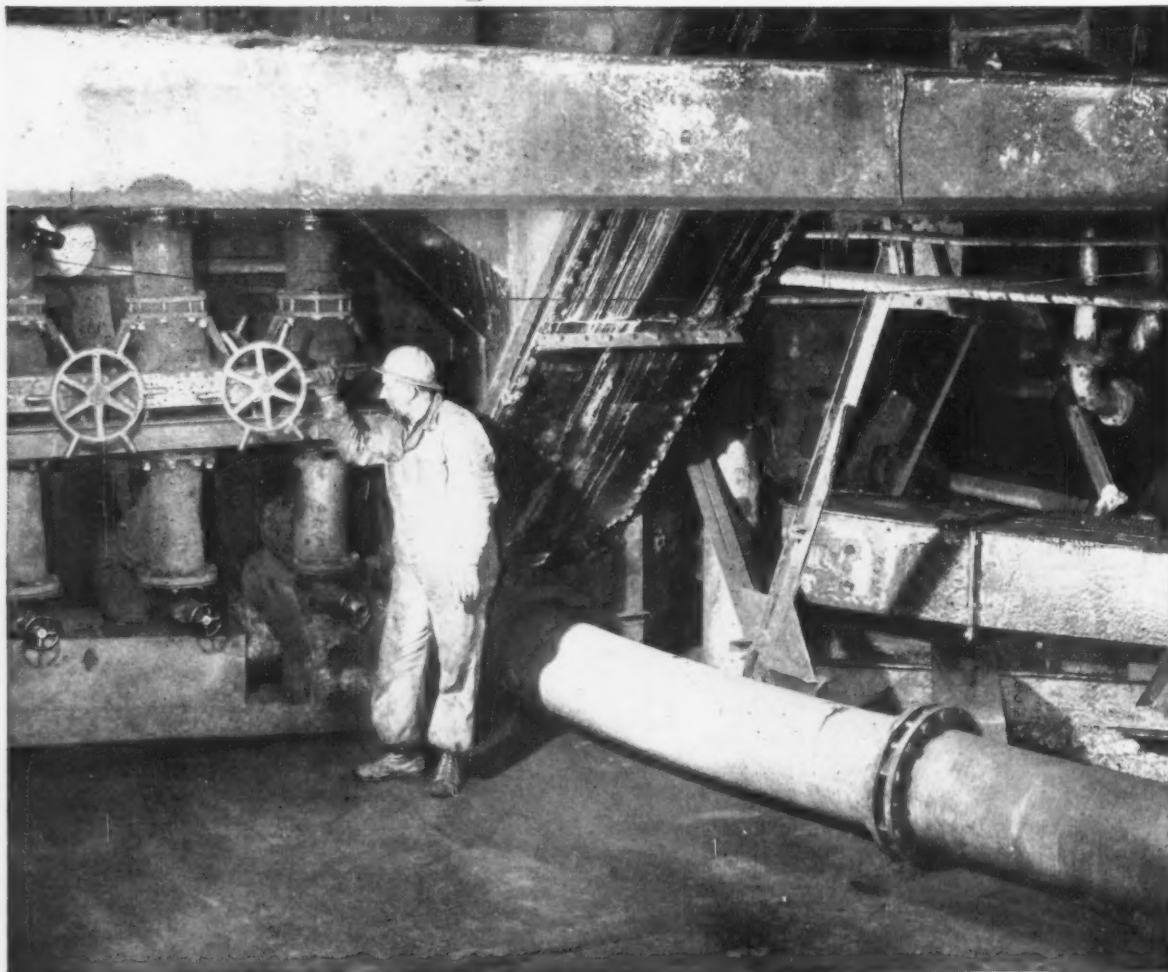


Photo courtesy North American Coal Corp., Cleveland, Ohio

## Hose swallows needle-sharp slivers of coal

### *B. F. Goodrich improvements in rubber brought extra savings*

**Problem:** At this mine, coal is put through a huge washing machine that shakes rock and sand out of the coal, much like a home washer shakes dirt out of clothes.

The water—8000 gallons of it a minute—used to be circulated in and out of the coal washer by steel pipes. But the water is loaded with tiny particles of coal—hard and sharp, like needles—that wore holes right through the steel. Welders worked every weekend, patching holes. The pipe was being replaced every year.

**What was done:** When a B.F. Goodrich

distributor heard about the trouble, he suggested a rubber hose developed by B.F. Goodrich for handling rough materials. It is made with a special lining of the toughest wear-resisting rubber known. This rubber is so tough that, on many jobs, it outlasts the hardest steel 10 to 1.

**Savings:** The B.F. Goodrich rubber hose was tried. You see one big length of it at right in the picture. It has been on the job over 4 years now, and is still in excellent condition. No holes, no repairs, no problems of any kind.

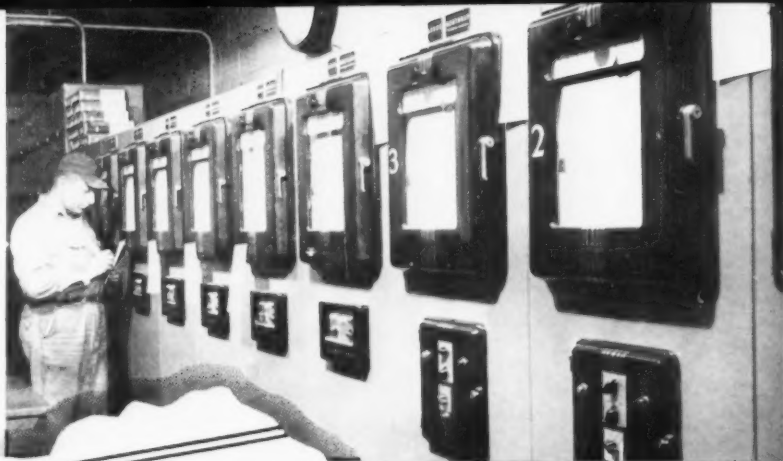
**Where to buy:** Your B.F. Goodrich

distributor has exact specifications for the B.F. Goodrich hose described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the rubber products B.F. Goodrich makes for industry. B.F. Goodrich Industrial Products Co., Dept. M-979, Akron 18, Ohio.

**B.F. Goodrich**  
**INDUSTRIAL PRODUCTS**

The ability of Lee Wilson engineers to work with steel mill metallurgists in the design and construction of annealing equipment for any application was reconfirmed recently when the Allegheny Ludlum Steel Corporation installed six additional Lee Wilson furnaces specially designed for annealing hot rolled stainless steels of the straight chrome variety.

Allegheny Ludlum, one of the nation's foremost stainless steel producers, wanted special furnace equipment that could withstand the stresses and strains encountered in rapid cooling.



## Allegheny Triples Chrome Stainless Annealing Facility

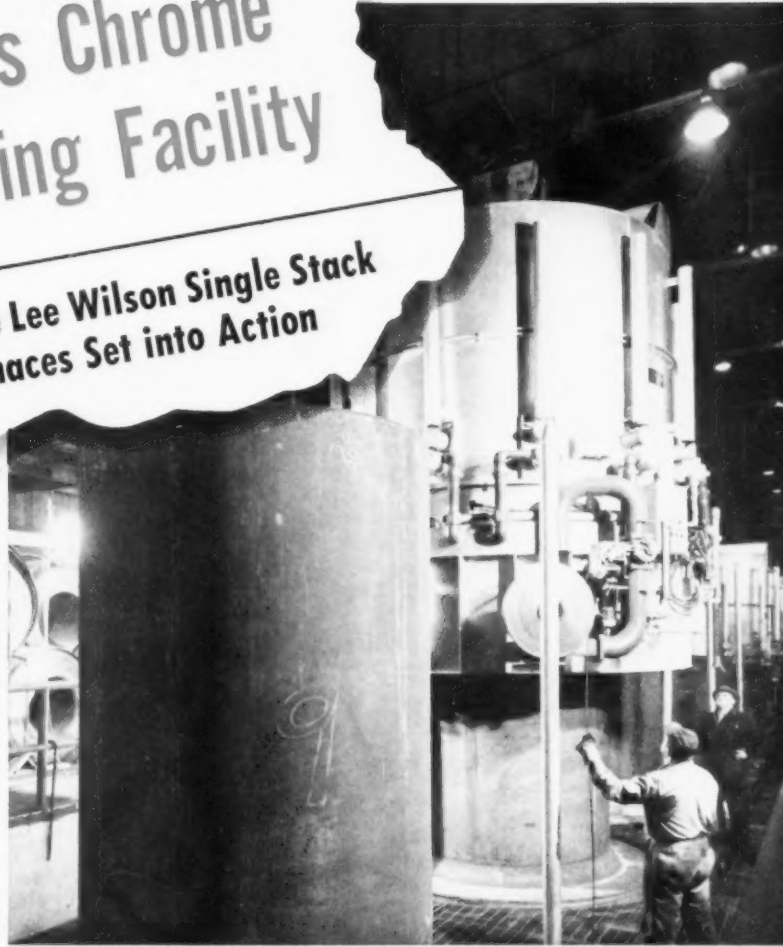
Six More Lee Wilson Single Stack  
Furnaces Set into Action

The stainless steel is brought up to a temperature of between 1525 and 1575 degrees, held for a short soak, and then both furnace and inner cover are removed. The fan is kept running. This results in an extra fast cooling.

While this fast cooling is desirable from a steel production standpoint, the rapid contraction is responsible for tremendous strains on charge supporting furnace structures and convector plates. Lee Wilson engineers developed special structures and plates that successfully withstand this extra fast contraction.

A plus advantage to fast cooling is the added production possible when the necessity for slower controlled cooling is eliminated. This, naturally, increases the production possible per base.

If you have a particular annealing problem, be sure to talk with Lee Wilson engineers before you buy. Literature upon request.



Allegheny's decision to purchase additional Lee Wilson furnaces was based on a thorough test. Three years ago, Allegheny installed three Lee Wilson furnaces and five bases (see left) for this highly specialized work. After considerable testing, Allegheny engineers selected the Lee Wilson Single Stack Furnace for their additional needs.

338



**ENGINEERING  
COMPANY, INC.**

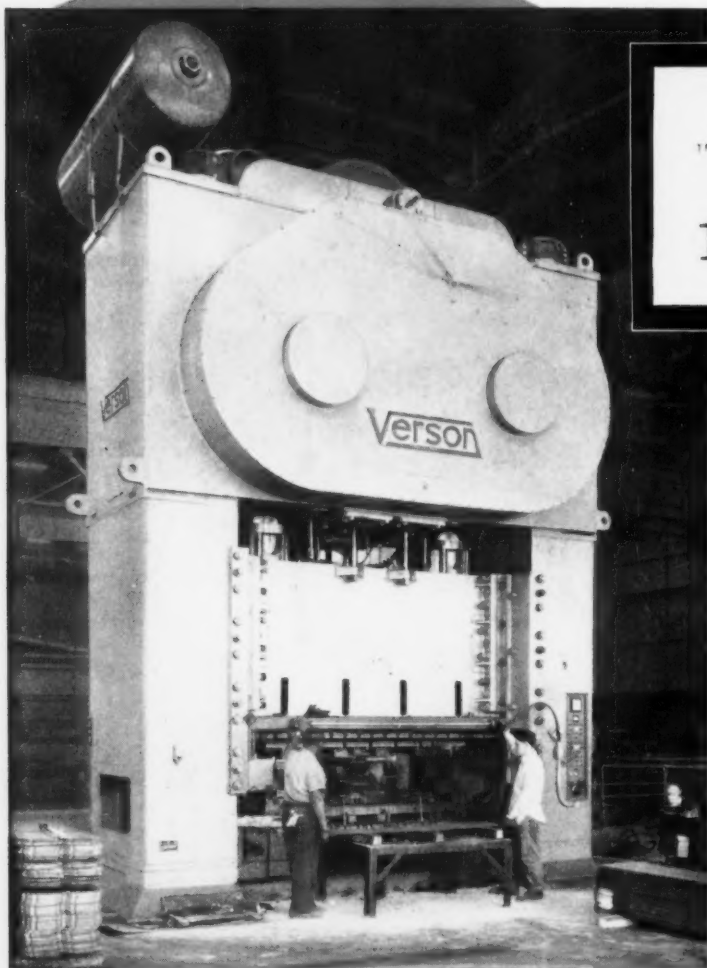
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SINGLE STACK RADIANT TUBE ANNEALING FURNACES

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## Front to Back Crank Arrangement of this



### **Verson** 1800 Ton Press

**eliminates  
need  
for  
extra long  
shaft**

Verson Presses offer features that bring accuracy, dependability and economy to a wide range of metal forming operations. The Verson Allsteel Frame, anti-overlap clutch and brake unit, square type gibs and non-oscillating vertical type adjusting screw are examples of the engineering and design that are a part of every Verson Press.

The press illustrated is a Verson 1800 Ton, twin gear, double crank. Two crankshafts are arranged front to back to eliminate the necessity of an extra

long crankshaft. Gearing for the press can be installed and removed through the front of the crown allowing installation in areas with low overhead clearance. The machine was built to J.I.C. standards and has all electrical wiring and equipment, lubrication piping, air piping and controls installed internally.

We will be pleased to recommend Verson Presses to fit your production process. Just send an outline of your requirements.

A Verson Press for every job from 60 tons up.



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